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THE INDIAN ECONOMIC JOURNAL

VOLUME IX JULY 1961 NUMBER ONE

THE FUTURE OF INDIA'S BALANCE OF TRADE

In preparing a study of the Indian economy in 1970[1] it became apparent and that there was a goodly measure of agreement among non-Indian economists that the deficit on the Indian balance of payments would, if India stuck to her present perspective plans, exceed $1 billion per year, or more than Rs. 500 crores. Since mid-1960 the Finance Minister and Mr. B. K. Nehru have been speaking of a payments deficit of $1 billion a year for ten years, after which the Indian economy would be able to maintain itself without external aid. This writer's curiosity became piqued because whatever the average level of foreign deficit over the next decade, it seemed unlikely that it would be a constant amount for ten years and then suddenly fall to zero. It is far more likely that the deficit, when it declines, will decline over a number of years; and if the zero point is reached in 1970, there must be a large hump between now and 1970 to result in a total decennial deficit of $10 billion.

This is by no means a criticism of the Finance Minister, who could hardly approach his potential creditors for so large an amount without either a ceiling on his needs or a terminal date for his demands, and, since the request for $10 billion over ten years exceeds what the "Aid-to-India Club" is at present willing to underwrite, his estimates are well within the requirements of a reasonable bargaining position. However, there is no reason why the independent analyst should accept as true estimates the figures which statesmen must perforce use. This paper is an attempt to arrive at an independent estimate.

The first step in making such an estimate is to break down the aggregates into smaller components, and here we shall restrict ourselves to the balance of trade. The need for foreign exchange to service loans, a component which will become increasingly important in India's balance of payments, will not be analyzed, partly to simplify the problem and partly because its magnitude depends largely upon the repayment terms which can be negotiated and the relative shares of "hard" loans, "soft" loans, and grants.

[1] Neale (Walter C.), *The Economic Status of India in 1970*, Santa Barbara (California), TEMPO, General Electric Company, 1958.

Since the 1930's it has become common to attempt predictions on the basis of a country's marginal propensity to import out of increments in the national income and the price elasticities of domestic and foreign demand. In an economy where the government exercises control only through general monetary and fiscal policy, with rare changes in the exchange rate, such a model is a good one—imports are a function of domestic national incomes and relative international price. But in an economy where imports are subject to the direct control of licensing and exports may be subsidized, conscious public policy can alter appreciably the relationships which exist in a relatively "free" economy.

When public policy can affect the balance of payments, the relevant disaggregation is that which classifies the goods according to the *ability* or degree of *willingness* to take action on the part of the government. Tentatively we may break down import goods into the following classes[1a]:—

1. Consumer goods, other than foodgrains.
2. Foodgrains.
3. Raw materials.
   a) which can be produced domestically.
   b) which cannot be produced domestically.
4. Components of otherwise domestically produced goods.
5. Capital goods.

Each of these classes confronts the Government with a different problem in deciding how to license imports because each has a different effect upon the development of the domestic economy.

Since a forecast of "either up or down" is no prediction at all, this writer will undertake the moral obligation implicit in discussion of future events and commit himself to time patterns and quantities. In doing so he begs the reader to remember that predictions cannot be "proved" and that he cannot show that some elements in the analysis are logically, necessarily, so. In exchange for the reader's indulgence on this point, the writer will try to make clear the assumptions or supporting predictions upon which the forecast of the balance of trade depends. It is likely that many readers will doubt the validity of one or more such assumptions, in which case they may reject the conclusions; but the argument here is meant to be treated as an effort to see whether disaggregation in terms of

[1a] While revising this paper a thesis by Subrata Ray *Fluctuations in India's Balance of Payments: 1900-1950*, submitted to Calcutta University in 1960 came to my attention. Mr. Ray analyzes imports by breaking them down into (1) consumer goods and (2) capital goods and raw materials.

degrees of freedom for policy makers is a reasonable way to go about predicting trends in foreign trade. In other words, while the writer is willing to make his predictions clear and concrete and even willing to bet a few rupees on the outcome, he is not convinced that he can foresee the future at every necessary point.

The major assumptions made in this paper are that Indian economic growth will continue in the pattern set in the first three plans, that by virtue of its size and natural endowment India will become an industrial nation, and that she will have a comparative advantage in manufacturing.[2]

1. *Consumer goods* imports other than food can be reduced to zero. They are not essential to any capital investment project, and their absence will not of itself slow down the rate of growth. A prohibition of all imports of such goods is administratively feasible —it is within the Government's ability—and the Plans contain no elements which should make the Government unwilling to prevent such imports. In fact, the Government has already gone a long way in depriving the Indian consumer of these goods.[3] In respect of consumer goods the Government is able and willing to make that increase which would ordinarily result from the marginal propensity to import, as incomes rise, inoperative.

The immediate effect of a prohibition of imports of consumer goods is to divert the demand to domestically produced goods, whose output is in no wise increased in the short run by the prohibitory order. There will therefore be a rise in the domestic price level, most marked among close substitutes for the forbidden imports. The Government will then face the choices of allowing this price rise without action on its part, of levying excise taxes on those commodities whose prices rise in order to increase its revenues and

[2] Present price differentials unfavourable to India are not good evidence that she does not have a comparative advantage. Aside from the tendency of prices to decline as an industry expands, becomes more experienced, and reaches capacity output, it is probable that the Indian rupee is overvalued. For instance, agricultural produce is sold in India at well above world prices while many manufactures are at world price levels. If one values the rupee at $.15 or about Rs. 18 to the £ sterling India's manufactures would now be highly competitive in world markets. This of course does not mean that India should devalue, for the merits of devaluation depend not only upon the price elasticity of demand for exports but also upon the elasticity of domestic supply of those exports and upon the effect on the terms of trade. To hold that the rupee is "overvalued" does not require one to believe that it should be devalued.

[3] Imports on private account were reduced by about Rs. 200 crores per annum after the exchange crisis of 1957.

[3a] For a more sophisticated analysis using the accelerator see the thesis by S. Ray, *op. cit.*, pp. 40-48.

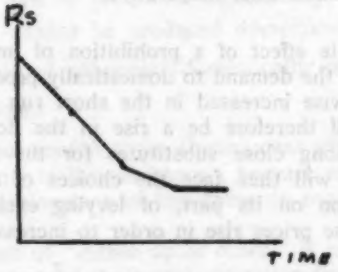
deprive domestic producers of windfall gains, of levying more general taxes to absorb an amount of purchasing power equivalent to that which was formerly spent on the forbidden imports while allowing relative prices to adjust, or of adopting any combination of the above. However, the existence of a domestic problem and the way in which the Government chooses to handle the problem of diversion of purchasing power do not affect the ability of the Government to reduce imports of consumer goods close to zero.

While it was said above that the public authorities have the ability to reduce consumer goods imports to zero, there are administrative difficulties. Complete prohibition puts a premium on smuggling and false invoicing, so that it may be considered advisable to permit a small flow of imports in order to make enforcement easier. Compared to the magnitude of other figures in the trade balance — figures in the hundreds of crores—a level of consumer goods imports of Rs. 20 to Rs. 40 crores, say, is a matter of little importance.

Chart I below indicates the pattern of imports of consumer goods other than foodgrains.

Chart I

Imports of Consumer Goods

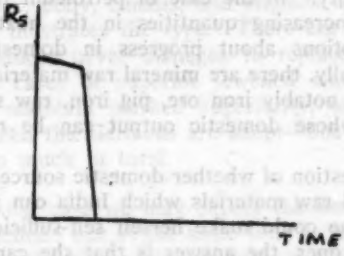


The next three classes of imports appear to be equivalent to what the Planning Commission calls " Maintenance Imports. "

2. *Foodgrains* are an essential import up to that point at which the population is sufficiently well fed to work effectively. Beyond this level of imports food can be considered in the same class as consumer goods — imports can be prohibited. At present, India is importing on commercial account and on P. L. 480 credit. The Third Plan calls for large increases in food output, increases large enough to provide 18 ounces of foodgrains for each man, woman, and child. If the correct biological assumption is made that children eat less than adults, the total output would be more than sufficient for feeding the population, and the allowance of 18 ounces of foodgrains is perhaps high — *not* because it is enough food, but because

at about 16 ounces people choose to add other kinds of food to their diet. One need not assume that India achieves her Third Plan targets in food output to guess that India can cease to import food by 1966; it will be sufficient if she achieves half her target, somewhere in the range of 85 to 90 million tons a year. With a moderate degree of success in agricultural development the import of foodgrains will follow the pattern of Chart II below.

Chart II
Imports of Foodgrains



In dealing with foodgrain imports India does not have the same freedom of choice as she has with other consumer goods imports; for until domestic outturn feeds her population properly a limit on imports will reduce the productive capacity of her population and thus defeat her efforts to increase her national income. The crucial actions in trying to limit the import of foodstuffs are not administrative, as with other consumer goods, but lie in the field of extension work and capital improvements in agriculture. Import policy here is a "free choice" only in so far as the B.D.O's V.L.W.s, Irrigation engineers, and workers in the fertiliser plants provide the degrees of freedom.

3. *Raw Materials* including semi-processed materials used in industrial processes have similarities to foodgrains as a problem for import policy. If they are not available industries now being created cannot produce, so that when the materials come from abroad imports cannot be reduced without preventing the increases in output which the plans are designed to achieve. In fact, total raw material consumption will increase, and not at the rate of growth of the economy but more rapidly—as fast as industrial output increases, perhaps 6% to 8% a year.

Some raw materials such as cotton and wool are imported but can be produced in larger quantities within India. With appropriate efforts on the part of the Ministries of Agriculture and of Community Development the need to import cotton fibre could be eliminated within a few years. Given a somewhat larger effort imports

of high quality wools could be made unnecessary within a decade to fifteen years. Pulp for rayon could also be produced domestically but the length of time involved in the forestry cycle means that it will take two or more decades to achieve self-sufficiency here.

It is difficult to think of any needed zoological or botanical raw material which India could not produce if she decided to do so, but there are mineral products—lead, tin, zinc—which she must always import. There is another class, most noticeably petroleum, which can be produced in India but which may or may not be available in quantity. In the case of petroleum India will certainly have to import increasing quantities in the next decade even on optimistic assumptions about progress in domestic discovery and exploitation. Finally, there are mineral raw materials and their intermediate products, notably iron ore, pig iron, raw steel, bauxite, alumina and coal, whose domestic output can be raised appreciably.

There is a question of whether domestic sources can replace foreign sources for all raw materials which India can produce domestically. Although she could make herself self-sufficient in any one or in a few selected ones, the answer is that she cannot eliminate the need for all such imports. Since demand will increase at 6% to 8% per year and since some of the raw materials are agricultural products whose rate of growth does not usually rise so fast, the trend of total raw material imports which could be produced at home will be slightly downwards, decelerating in later years, as shown in Chart IIIa. If anything like the proposed increases in food outturn materialized, a more rapid increase in agricultural raw material outturn can be achieved by making over current grain and pulse lands to these industrial crops. On the other hand, imports of raw mate-

Chart IIIa

Imports of Raw Materials which can be produced domestically

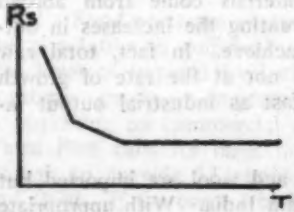
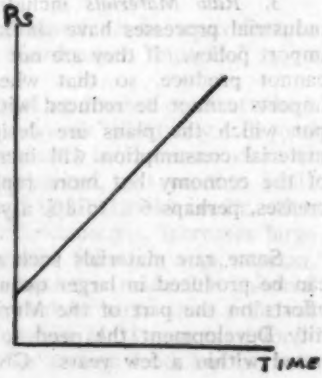


Chart IIIb

Imports of Raw Materials which cannot be produced domestically



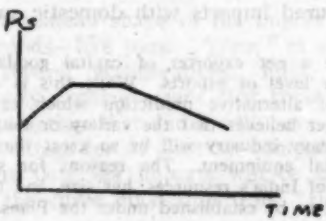
rials which cannot be produced at home will rise steadily, as illustrated in Chart IIIb.

4. *Components* imported in order to produce complete goods, whose other parts are manufactured in India, are also maintenance imports, and restrictions placed upon such imports serve only to prevent domestic industry from producing as much as it could, unless domestic sources are found. The typical "life history" of industries using foreign components is one of declining use as home industries replace foreign suppliers. The automobile industry, which begins by assembling a foreign-made car and proceeds by stages to manufacture fittings, body, chassis, and engines until the whole car is made at home, illustrates the type. There are some cases where the domestic producer never manages to replace the foreign producer—as in the cases of superior jewelled watch movements in which the Swiss maintain marked superiority, or precision optical instruments at which the Germans are adept—but these are few and do not amount to much in total.

In any particular case we may expect the demand for imported components to decline; but at the same time as any one is declining there will be new industries arising to demand imported components while somewhat older industries which are expanding rapidly will be importing a constantly smaller proportion of the final product but a rising absolute amount of those components which must still be bought abroad. The net effect upon imports is the result of race between the creation and expansion of new component using industries and the creation and expansion of domestic industries producing these components. In the early years of economic growth with many industries newly starting the demand for components will grow more rapidly than the domestic supply. But since India by natural endowment as well as by Plan will be a major industrial country, her home capacity will eventually catch up with and surpass her growing demand. The predicted result will then be the pattern illustrated in Chart IV.

Chart IV

Imports of Components



The three classes of "maintenance imports" discussed so far have this in common; that any effort by public authorities to reduce their levels or even to prevent an increase in their levels will forestall an expansion of domestic output and so defeat the very purpose of the Plans. They also have in common the characteristic that the demand for these imports can be reduced by a conscious policy of expanding home output of the same goods—the effective degree of freedom or ability lies not in the field of administrative licensing but of agricultural and industrial promotion.

The three classes of "maintenance imports" differ in that *food* imports can be quickly reduced to zero by current agricultural efforts, whereas *raw material* imports can be reduced only more slowly and then not to zero since some will continue to rise, while imports of *components* must rise and level off before a decline sets in. Furthermore, the more India tries to add variety to the pattern of her manufacturing output the more rapid will be the original rise in imports of components.

5. *Capital goods* present some of the same problems as do maintenance imports, but differ in that, whereas a shortage of maintenance imports prevents the full utilization at productive capacity and limits realized national income, a deficiency in capital goods deprives the country of the *capacity* to produce. The failure to utilize capacity can be rectified quickly by allowing additional maintenance imports but failure to install capital equipment means a long delay in developing the ability to produce income—in fact delays the whole process of economic development. There is thus even stronger reason for the government to allow a growing volume of capital goods imports, to refrain from restrictive licensing.

The course of capital goods imports will resemble that of component imports. We may expect a rising trend as new industries are started, followed at some later date by a decline as the new industries begin to supply the capital equipment. Ultimately, given India's long-run comparative advantage, the level of capital goods imports will be low, and she will in fact be a net exporter of capital goods.[4]

This process is the same as the import replacement process discussed under "components," but on a larger scale. The problem in replacing manufactured imports with domestic supplies is that each

[4] India could be a net exporter of capital goods at a high level of imports and a higher level of exports. While this is a logical possibility—one of the kinds of alternative prediction which cannot be disproved—nevertheless this writer believes that the variety or range of India's comparative advantage in heavy industry will be so great that she will not import many kinds of capital equipment. The reasons for so believing—not the proof—is the variety of India's resources, her size, and the kind of industries being established and to be established under the Plans.

effort to reduce the import demand for a foreign made piece of capital requires the import of another kind of foreign capital equipment. Thus India can relieve herself of the need for imported generators only by importing equipment for a heavy electrical plant. She can relieve herself of this need only by importing capital goods for machine tool factories and heavy machinery plants. A reduction in cement imports, in imports of railway wagons, or, most important today, in imports of steel, all require purchases abroad of the equipment needed to produce these goods at home. The larger the variety of new industries established and the more rapidly they are established the larger will be the import bill for such goods. As more and more capital goods industries are brought to maturity at home the fewer will be the required imports, until the time is reached when such imports will be low and exports of many of them will be high. The expected pattern is that shown in Chart V. If development were slowed down the rise would be less steep and the height of the hump lower. Development could be slowed enough to eliminate the hump altogether. But slow development is just what India wishes to avoid: there was, after all, no hump before the period of the Plans.

Chart V
Imports of Capital Goods

The flat-topped plateau shape of the import curves for components and capital goods—like some "'gram" in a school geometry—are the result of several considerations. First, rapid expansion of industries from nearly nothing means that these imports must rise. Second, if the assumption that India will have such a wide range of comparative advantage (or at least no comparative disadvantage), that at some future date her imports will be small, then at some intermediate time the curve must turn from "rise" to "fall."

Pyramids and round hills fulfil this requirement equally well, and round hills may appear the most likely, but two further considerations point to a plateau. The rise in capital imports is fed partly by the absence of the capacity to produce the equipment at home, but also by the rising proportion of national income devoted to investment. During the Second Plan the investment ratio rose at about 6% per year, or investment increased by about Rs. 80 crores per annum over and above the increase proportional to the rise in national product. The balance of trade figures indicate that most of this increase was financed from foreign credits or grants and drawing on sterling balances. To some extent the continuing rise in the investment ratio during the Third Plan must be financed by a rise in the domestic savings ratio, but certainly pressure from this source will continue. Thus annual increments in capital goods imports of Rs. 50 crores or so are likely. But when the rate of investment levels off the annual increments in demand for capital goods will rise only as fast as the national product. At this point there will be a marked reduction in the *rate of increase* of demand for capital goods, and it is for this reason that the curve in Chart V has a dog-leg or angular turn.

Meanwhile, domestic capacity to replace imports will have been increasing and it will ultimately result in a downward slope of the import curve. However, the capacity to replace will remain small for the next half a dozen years, while the rate of investment should become constant *about the mid-sixties* at around 15%.[5] Thereafter replacement would give the plateau a downward tilt were it not for the fact that there is and will be "suppressed" demand[6] for capital imports. As domestic savings and exports[7] rise with a consequent easing in the balance of payments position the "suppressed" demand can be slowly released, keeping capital goods imports pressing a ceiling until domestic supplies cause the slope to become negative.

As the suggestion of "suppressed" demand implies, public and private businesses are and will be willing to import more capital equipment than the licensing authorities allow.[8] The suppression of demand by licensing slows the rate of growth and extends the

[5] This rate of investment will be sufficient to assure continued development and a rising standard of living and therefore the pressures "to consolidate" and to reduce the inflationary pressure necessarily resulting from raising the investment ratio. But whether or not these arguments are persuasive, a levelling off of investment at 15% is one of the assumptions made in this prediction.

[6] "Suppressed" by Government licensing in view of the deficit on the balance of payments.

[7] See below, p. 18 ff.

[8] Amply illustrated by imports during 1956-58 and by complaints and demands in any daily newspaper.

period before India is self-sufficient, but the government does not have freedom to allow unlimited imports since it has not been given a blank cheque by India's suppliers. This means, then, that the sharp break in the rise in imports of capital goods will be reinforced by the ceiling on foreign assistance, while the subsequent downturn will be postponed by a desire to take advantage of all possible foreign aid.

The same arguments apply to the shape of the *components* curve.

It should be noted that during the rising and plateau phases capital imports will be directly competitive for foreign exchange with raw material imports. So long as Indian industries are working under capacity there will be scope for a sudden jump in raw material imports. As capacity grows pressure to permit imports of raw materials will grow. At the present time the government has evidently chosen to limit current output rather than the building of new capacity. It is unlikely that this decision will be changed in the next five years, but thereafter, it may seem desirable to enjoy the fruits of ten years of restraint.

The next step in the analysis is to attach quantities and dates to the schematic charts. One cannot pretend that prediction can be better than rough, nor in view of the dimensions of the problem—imports now averaging about Rs. 1,000 crores per year—need one feel guilty about approximation to the nearest hundred crores. Any attempt to predict our five classes within a margin of, say, Rs. 10 crores would not only involve spurious accuracy it would be patently foolish.

Summaries of trade returns group imports by commodity classes so that our classes cannot be read directly from them. However, a comparison of current returns[9] with the classification of imports given in the Third Plan[10] can provide approximations. Cereal imports in 1958-59 and 1959-60 were Rs. 159 crores and Rs. 114 crores. With the P.L. 480 imports during the Third Plan and the requirement that India continue to make its usual commercial purchases foodgrain imports should remain at the level Rs. 125 crores to Rs. 150 crores until the mid-1960s, at which time food imports can fall to zero. The "demand curve" in Chart II is horizontal during the P.L. 480 period and drops to the X axis thereafter, about 1964-67.

[9] Reserve Bank of India *Report on Currency and Finance, 1959-60*, Bombay, 1960; Statements 79.

[10] Government of India, Planning Commission *Third Five Year Plan: A Draft Outline*, New Delhi, June, 1960; pp. 53-6.

To sort out *raw materials, components,* and *consumer goods* from the trade returns to match them with "maintenance imports" averaging Rs. 728 crores from 1956 to 1959, as given in the Third Plan, is difficult. Deducting both electrical and other machinery, railway vehicles, and other transport and equipment (which fit our capital goods classification), and foodgrains from total imports in 1958-59 and 1959-60, there are Rs. 469 crores and Rs. 522 crores left to allot among consumer goods, raw materials, and components. Something in excess of Rs. 300 crores are certainly raw materials, about evenly divided between those which can be produced at home and those which must be imported or cannot easily be produced domestically. Another Rs. 70 crores may be (a guess) imports of components, and consumer goods may still be running at about 60 crores.

Since one cannot (without doing a lot more work than this writer has done) sort into the proper classes for our purposes the goods in a number of commodity classes, one may allot the unclassifiable among our classes, bearing in mind that "metal manufactures," for instance, will include some components, some consumer goods, and some capital goods. Table I presents a rough guess at the dimensions of imports in each of our classes at present.

TABLE I

Class	Approximate Current Annual Imports (Rs. Crores)
1. Consumer Goods	60
2. Foodgrains	150
3. Raw materials:	
(*a*) producable at home	170
(*b*) necessary to import	170
4. Components	70
5. Capital goods	280
Total	900

It was argued above that consumer goods can be reduced to zero, but that administratively (and perhaps, for some items, politically) it might be thought better to allow some imports of the goods. We may take it that Rs. 60 crores is near the lower limit, dropping slowly to a floor of perhaps Rs. 40 crores.

For *Raw Materials* (*a*) and (*b*) the origin is 1961. The decline in (a) will not be rapid but should be continuous for the next decade or more. Demand for these materials should increase at 5% to 8%

per year while domestic output is rising at perhaps 5% or 6%.[11] With the additional effort during the Third Plan the increased output should exceed the increased demand, with a consequent fall of perhaps Rs. 10 crores per year. This means imports of Rs. 120 crores at the end of the Third Plan and Rs. 70 crores at the end of the Fourth, and perhaps Rs. 50 crores by the end of the Sixth Plan.

Raw Materials (*b*) will rise steadily at 6% to 8% per year, doubling about 1970 and doubling again to perhaps Rs. 700 by 1981.

Components have been rising and will continue to do so for a while, but the growing output of machine tools and small engineering shops should allow the turning of the corner in the mid-sixties at Rs. 90 to Rs. 100 crores.

Imports of *Capital Goods* will follow a pattern similar to that of components. Because of the emphasis on a rapid expansion of heavy industry and the efforts at diversification the rise in imports will be proportionally greater and could last longer. However, it is hard to believe that suppliers of these goods will be willing to satisfy an almost insatiable appetite, so we may assume a ceiling at Rs. 500 crores reached in 1964 to 1966.

The relationships on which the predicted shapes are based are:

1. Consumption imports would be a function of national income were it not for licensing. Therefore
$$\Delta M_{cons} \neq f(\Delta Y), \text{ but } = 0$$
2. Foodgrain imports depend on domestic output and population and take the form
$$M_{grains} = (16 \text{ Oz.}) \text{ (population) } (365) - \text{Output of foodgrains}$$
3. Raw material imports depend on the level of domestic manufacturing and on the level of domestic production of these materials:

a:
$$\frac{\Delta M_{RMa}}{M_{RMa}} = \frac{\Delta \text{ Industrial output}}{\text{Industrial output}} - \Delta \text{ domestic production of RMa}$$

b:
$$\frac{\Delta M_{RMb}}{M_{RMb}} = \frac{\Delta \text{ Industrial Output}}{\text{Industrial Output}}$$

[11] *Ibid.*, pp. 145, 151.

4. Components imports are a function of industrial output *and* of the stock of capital K (previous development):

$$\frac{\triangle M_{comp}}{M_{comp}} = \frac{\triangle \text{ Industrial output}}{\text{Industrial output}} - \alpha K$$

5. Capital goods imports are a function of investment, of the growth of the rate of the rate of investment, and of the stock of capital:

$$M_{capgds} = a \cdot I + b\left(\frac{I_{to}}{Y_{to}} + \frac{I_{t-1}}{Y_{t-1}}\right) - C \cdot K$$

The specific shapes follow from the assumptions made about the nature and size of domestic developments: to wit, that the negative term will soon exceed the positive term in equation (2); that the negative term will increase more rapidly than the positive term in equation (3a); and that the values of I—and therefore of K in equations (4) and (5)—are limited by the willingness of developed nations to extend credit.

Bringing together the elements of the argument, we have the figures in Table II, showing predictions over the next two decades.

If these forecasts are approximately correct, imports will rise by about Rs. 250 crores from their present level, fall from that peak by over Rs. 100 crores when food imports are stopped, and then rise steadily as the need for raw and semi-processed materials increases with industrial expansion.

TABLE II

Imports in Selected Years

(*Rs. crores*)

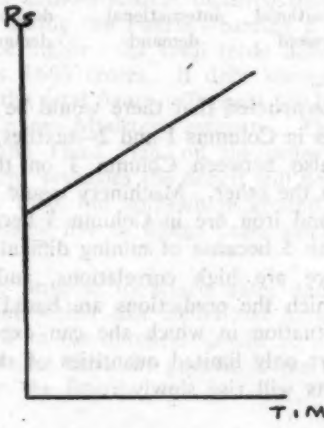
Class	1966	1971	1976	1981
1. Consumer Goods	40	40	40	40
2. Foodgrains	150	0	0	0
3. (*a*) "Domestic" Raw Materials...	120	70	50	50
(*b*) "Foreign" Raw Materials	270	430	700	1,110
4. Components	100	100	80	60
5. Capital Goods	500	500	400	300
Total ...	1,180	1,140	1,270	1,560

The other side of the balance of trade, *i.e.*, exports—can be dealt with quite shortly. India's traditional exports of tea, jute, and cotton goods will not increase much. Tea and jute face competition and India can hope to do no better than hold her own in a market

which at best will be expanding slowly. Cotton goods also face competition but India should prove an effective competitor in the "newed" markets of South-east, South, and South-west Asia, and East Africa.

The possibilities for large increases in exports lie in the field of manufactured goods, especially engineering products based on steel or power. India can be expected to take an increasing share of world markets for these goods but her great opportunities will come when the other countries of Asia, the Middle East, and Africa begin to develop. In these areas her comparative advantage will be reinforced by low transport costs and by the "softness" of the Indian rupee. This pleasing prospect lies, however, in the more distant future—certainly not until the mid-sixties and probably not until the seventies.[12] The pattern and dating of her export future is shown in Chart VI and Table III.

Chart VI
Traditional Exports



It may be argued that large increases in exports are possible if continuous intensive efforts are made to find, develop, and supply foreign markets. Examples which can be cited are exports of iron ore to Japan and now perhaps to Egypt and the doubling of exports

[12] None of the countries with potential markets is now developing, except possibly Egypt. Most are still suffering political instability without clear prospects of effective, stable Government. It appears also to require a few years after the establishment of a stable Government bent on development before the development plans of that Government create a large demand for foreign goods.

of leather goods between 1958-59 and 1959-60. However, the reason for doubling that there will be increases sufficiently large to eliminate the chronic exchange crisis is a belief that the domestic economy will tend to absorb those goods which will be demanded by foreigners.

Suppose one were to draw up a table ranking export goods in the various classes shown in Table III. This writer suspects that

TABLE III

Rank Ordering of Export Goods In Supply and Demand Classifications

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
Goods with a high elasticity of export supply	Goods for which there will be small increments in international demand	Goods for which there are potentially large increments in international demand	Goods for which there will be large increments in domestic demand	Goods with a low elasticity of domestic supply

if such lists were constructed that there would be a high correlation between the rankings in Columns 1 and 2—textiles, shoes, jute goods for instance—and also between Column 3 on the one hand and Columns 4 and 5 on the other. Machinery would rank high in both Columns 3 and 4, and iron ore in Column 3 because of new steel plants and in Column 5 because of mining difficulties and transport bottlenecks. If there are high correlations, and this is another assumption upon which the predictions are based, then India faces the disappointing situation in which she can export the "wrong" goods but can export only limited quantities of the "right" goods. Consequently, exports will rise slowly.

From the present level of exports at Rs. 650 crores, the increase over the next decade will bring her export earnings up to Rs. 870 crores in 1971 if we assume an average annual increase of 3%, roughly in line with increase in world income. The same rate of increase over the following decade would raise the earnings to Rs. 1180 crores in 1981, but the rate should be higher than 3% during the 'seventies since that is the period when India should penetrate world markets as an industrial nation. By that time India may have become a net exporter of capital goods, although probably not until some time in the 'eighties.

On the assumption of a 3% annual increase in exports the deficit on the balance of trade will be

1961: Rs. 300 crores.
1966: Rs. 430 „
1971: Rs. 270 „
1976: Rs. 260 „
1981: Rs. 380 „

However, the latter two figures should be lower as manufactured exports rise, the last figure appreciably lower.

This paper has not undertaken to discuss the whole balance of payments because it has been an attempt to plot the time-shape of components of total trade and the balance of payments position also depends on political and semi-political negotiations of credit and repayment (if any) terms. The Third Plan anticipates a draft of Rs. 500 crores (Rs. 100 crores per year) for debt servicing and amortization. With additional debt incurred during the Third Plan period the burden during the Fourth—barring a great deal of long-term credit—will be higher; the total trade deficit by 1971 will be of the order of Rs. 3,600 crores. If debt servicing adds a burden of Rs. 1,200 crores the total figure will equal $10,100 million, remarkably close to the Finance Minister's estimate. The peak burden will be at the end of the Third Plan, on the order of $1,200 million. However, in the early 'seventies the deficit will not be zero, as hopes were announced in 1960, but somewhere around $600 million with the zero goal still some five to fifteen years away.

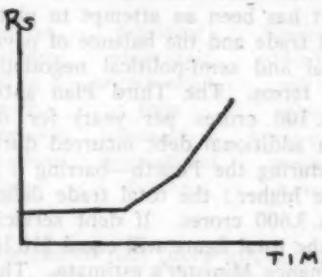
In fulfilling the promise to attach dates and quantities to the predicted shapes, the writer has committed himself in a way that he will regret. Faith in the numbers should be—will be—small. Of more theoretical interest than the guesses is the method used in so roughly to arrive at the figures.

In summary, the view is that India's imports consist of functional groups each of which will behave differently and in respect of which the Government has differing degrees of freedom to manoeuvre. If willing to face the problems of popular demand and diverted purchasing power the Government has virtually unlimited control over imports of consumer goods. Up to the point of sufficiency, it has no freedom in regard to food, but once sufficiency is achieved, complete freedom. Because raw materials for which there are no domestic sources cannot be limited without limiting national income the licensing authorities will never be free to restrict them severely. The freedom of the licensing authority in respect of raw materials which India can produce will depend upon the effectiveness of those responsible

for increasing domestic output, especially agricultural and mineral products.[13] The degree of choice to admit or prohibit component and capital goods imports depends on the willingness of Government to force the pace of growth, to risk inflation, to tax or to make profits, and the willingness of foreigners to lend. The rate of increase in capital imports and the date at which they cease to rise are higher and sooner the larger are the Plans. The behaviour of *components* imports depends more, however, than does the behaviour of capital goods imports on the *distribution* of Plan outlay.

Chart VII

New Exports



A rate of growth slower than that now intended will tend to reduce the altitude of the plateaus, lengthen the time until there is a downturn, and of course moderate the rising level of foreign source raw materials. If, however, the relationships between the classes of imports and Government policy are correct, the shapes of the curves in Charts I-VII portray the changing composition and balance of India's foreign trade.

Punjab University and
the University of Texas. WALTER C. NEALE

[13] In this paper petroleum has been considered a raw material which India cannot produce. If luck and prospecting efforts prove unexpectedly fruitful, the raw material import prospects would change appreciably, but the new fields, notably Cambay, do not yet alter the picture sufficiently to permit us to assume that Indian production will increase in step with demand, which will probably increase even more rapidly than demand for other raw materials.

THE UTILIZATION OF INDIAN INDUSTRIAL CAPACITY* (1949-1959)

THE purpose of this paper is to focus attention on a relatively neglected aspect of the theory and policy of economic development, namely, the intensive utilization of existing industrial capacities in underdeveloped countries. The investigation is limited to the technical aspects of capacity utilization and does not consider its welfare implications in the broader economic context.

The major part of the article consists of a statistical investigation and interpretation of India's experience in recent years in regard to the utilization of industrial capacity. The study is concerned not only with the time patterns of capacity utilization, but also with the relevant inter-industry variations, which point to some of the restraints set by capacity utilization upon total growth. In conclusion, the implications of the emerging patterns of capacity utilization for public policy are briefly discussed.

I THE CONCEPT OF CAPACITY

The concept of industrial capacity and the question of its effective utilization have received relatively little attention in economic literature except in some brief theoretical comparisons between possible capacity levels and real levels of utilization under static conditions of imperfect competition.[1] Western economists adopted a less theoretical and more operational approach to these problems during the depression of the 1930's and the period of World War II, but apparently the question has remained of interest for only relatively extreme periods of under-or over-utilization. Despite the neglect, the problems of capacity utilization appear to be the crux of a number of the pressing problems of underdeveloped regions. Broadly speaking, the lack of utilization reflects imbalances in growth, the quantity and quality of management, and the acute problems of governmental administrative decisions in determining the allocations of foreign exchange and the licensing of new investments. An understanding of the actual conditions of capacity utilization

*The authors wish to thank Professor Jerry Miner of Syracuse University for his comments on an earlier draft of this paper.

[1] E. H. Chamberlin, *The Theory of Monopolistic Competition*, Harvard, 1933, Chapter V; J. Robinson, *The Economic of Imperfect Competition*, London, 1933, Chapter 7; N. Kaldor, "Market Competition and Excess Capacity," *Economica*, New Series, Vol. II (1935), pp. 35-50; and L. R. Klein, "Some Theoretical Issues in the Measurement of Capacity," *Econometrica*, April, 1960, pp. 272-286.

gives additional substance to the incremental capital-output ratio estimates that have become popular in planning projections.

There are at least two meaningful approaches to the concept of capacity that are worthy of consideration and distinction for a fuller understanding of the present statistical study. The two approaches to the concept of capacity are (1) the "engineering" and (2) the "modified engineering" definitions. In its broadest sense, capacity refers to the potential output per unit of time that a plant can yield under given processes and conditions. Although capacity is usually defined in terms of potential output as if it were an objective and fixed amount, it must be remembered that the operating manager's view of available installed capacity may differ. It may reflect a variety of considerations such as the quality of the management staff and the availability of repair and replacement parts, all of which tend to modify the simpler engineering estimates of plant capacity based on machine potentials. The operating manager is generally more concerned with the utilization of the potential capacity which provides us with a far more complex set of parameters.

The *engineering approach* is in terms of the capacity potential of the equipment of the firm, generally built up from estimates of the speeds of the major machines, and finally assessed in terms of the limitations set by the slowest equipment. The analyst may consider the time allowances for machine maintenance and possible shut-downs if they are regularly expected events. For single product operations this is a relatively simple calculation as the maximization would generally assume a single process and the restraint would be the slowest department (or the slowest one that was not supplemented by purchases from outside the firm). For a multi-product plant in which processes could be used on a number of different products, the computation is somewhat more complex but capacities can be estimated within an operational error of estimate. It is likely that such estimates are based on the major equipment units of the plant and the analyst assumes that the smaller "fit" production units will be available.

The *modified engineering approach* takes into consideration the limitations of the other factors of production—*e.g.*, the quantity and quality of available labor and management, the quality of raw materials and the regularity of delivery schedules of inputs for the plant. The more significant differences between this estimate and the pure engineering estimate probably lie in the consideration given to the influences of management capabilities and the established patterns of operation which include the effectiveness of plant layout, supervisory controls over labor, and the methods and time dimensions of work activity in terms of the actual average plant situation.

The definition of installed capacity used by the Indian Government in collecting its statistics is not rigorous, but it probably comes closer to the "engineering" definition given above. In some cases it may be a composite of the "modified engineering" definition and some other views of management that emphasize the utilization aspect rather than the "installed capacity" concept.

Factors Influencing Utilization

Utilization of capacity reflects the influences of market supply and demand conditions (long and short run), Government policies, the degree of monopolization within an industry, the social value system of the dominant entrepreneurial class, and the attitudes of the managers of the firms in underdeveloped countries. These include the accepted patterns of management behaviour which tend to pervade a group within a country, an industry, or a class of society.

A number of real factors reinforce the attitudes of managers toward utilization of capacity. Employment laws that make it difficult to dispose of a surplus labor force in a plant will make managers think twice before expending the work force if the demand for the commodity is uncertain. Administrative delays by Government agencies that hamper the smooth acquisition of additional equipment or supplementary (small "fit") units to round out a production process can do much to deter entrepreneurs who may be considering additional shift operations for the first time. Unpredictable delivery schedules of raw materials and spare parts often make the disutilities of operating at multi-shift levels greater than the advantages of the potential increase in profits.

The value system may also be expressed in terms of attitudes toward delegating responsibility and risk taking. A management that refuses to delegate responsibility for major decisions will generally resist multi-shift operations, especially if the members of the family of the management are not capable of, or interested in, running the off-hours shift. This may be over-ridden by the technological demands of the industry. Managements may be reluctant to hasten the deterioration of their stock of equipment by multi-shift operations if they believe that spare parts are not easily available. It may be expressed as a reluctance to make any large expenditures on new equipment thereby showing a propensity for liquidity and avoidance of risk. It is interesting to note that multi-shift operations would allow them to conserve expenditures on additional equipment but the factors that press for single operations are often more influential than the preference for liquidity. Furthermore, the desire for liquidity, the propensity to avoid risk, and the fear concerning deterioration of equipment in short supply may exist side by side

with inefficient equipment maintenance programmes that decrease the longevity of capital. Although there are many specific factors operating on individual managements in these choices, the distrust of others as new managers, and a short-sighted attitude toward management development are major influences and appear to outweigh liquidity and risk in many industries. In some cases where capacity underutilization is related to restrictive market practices, the drive for high per unit profits and the attempt to avoid the risk of sinking new capital which would be essential for widening the market may be significant contributory factors. However, there are many instances where demand is rising and market restrictions are not critical for profitability, and multi-shift operations would save additional capital outlays but where firms persist in plant expansion in preference to using available capacity optimally. In these situations the fears of management often dominate the interest in liquidity and even reductions in overhead costs per unit—the risks of the delegation appear greater than the risk of capital investment (which seem reasonable enough in a market characterized by a growing demand).

The longer-run considerations of capacity utilization must include the time shape of projected development of the firm and its potential in the market. The training of additional workers and managers may be accomplished; in part, through a more intensive utilization of capacity. A core of workers for a second (or third) shift can be trained on the first shift, a procedure that would allow the existing management to carefully oversee the programme and to determine when the force is ready for action on its own. The immediate market conditions may not always warrant full scale multi-shift operation but using part of a second shift to prepare trained personnel for a projected market demonstrates a degree of foresight that can pay off handsomely. The initiation of a skeleton second shift operation to prepare for expanding markets will depend on the alternative user and idle costs. If user costs are low and nearly equal to idle costs the additional training costs are generally the variable costs of production and may be covered by the sales of the additional output in the present market or in other markets under another trade name. Even some losses on such sales can be calculated as a cost of training. However, if user costs are high relative to idle costs, managers would probably recognize that training costs would be prohibitive unless the expansion of demand were to occur rather soon. In this sense if new equipment is not available, or is costly to replace, and if it deteriorates in use readily it is like any other raw material that can be stored in reserve because it is in short supply. To use it for training purposes would possibly result in costs that would be difficult to recoup.

II. The Significance of Capacity Utilization for Underdeveloped Countries

The association of the idea of "growth" with new industrial investments has often obscured the important role intensive utilization of existing capacity can play in the process of economic development. In view of the severe scarcity of capital resources in underdeveloped countries, it stands to reason that improved utilization of existing productive capacity should receive the highest priority in any development programme. The relevance of this problem may be examined from a number of different, but related, points of view.

(1) *Conservation of Scarce Capital*

Underutilized industrial capacity represents an important resource which an economy may be able to exploit with advantage to further its growth. Improved utilization enables a country to conserve scarce investment and allocate it more wisely. For analytical purposes, the capital thus conserved may be divided, in terms of their origin, into two categories, namely, external and internal.

(a) First, improved capacity utilization may result in a significant saving of investment which must be drawn from outside the economy by the use of foreign exchange, or through the absorption of foreign loans. Since new investments invariably require imports of machinery, replacement parts and related items which are often not produced in the underdeveloped country, the cost of expansion of capacity in terms of foreign exchange can be considerable. It may also mean a more advantageous utilization of foreign loans that are to be made available to the economy and would certainly remove some of the criticisms that have been raised by some lenders who have questioned the adequate utilization of already available capital. Effective utilization of capacity may not reduce the foreign exchange content of a development plan significantly, but it might allow an economy to provide more investment in critical industries.

(b) In addition to external capital, creation of new industrial capacity depends heavily on two forms of internal capital. In the first place, new investments call for internal direct capital in the form of physical resources that are absorbed in the construction of plant and machinery. Underutilization, therefore, forces a redundancy in capital goods that is not really necessary and could be put to better use elsewhere. This misallocation is often only a part of a larger picture. In many underdeveloped countries it is at times necessary to locate new plants in outlying districts or at some distance from the established centres. Social overhead capital would then be needed in some forms to provide additional services for employees and families. This may range from providing roads and conveyances to the construction of new housing, parts of cities, and even entire

new towns. While social overhead investments are rewarding in the long run, such choices must be weighed against other needs of the system and should be alternatives in terms of the optimal utilization of available resources. They have less justification if the choices are imposed by the improper utilization of resources.

(2) *Impact on Management Skills*

New industrial investment undoubtedly help, build and broaden the base of the managerial structure of a country. However, there seems to be a balance between the rates of development of new investment and the growth of management skills that provides the best results. If investments increase faster than the supply of management skills the system may not benefit fully because of possible underutilization of capacity and retardation of production. If managers are trained but lack employment because investments have not taken place, the situation is just as bad. Underdeveloped economies tend to suffer more from the first condition indicating shortage of management skills. The squeeze in the management market often forces the Government to "borrow" managers from some of the established firms for their new plants; new firms as well as expanding old firms tap the same limited market.

At this first stage the problem is how to service the expanded activities with managers and at the same time train more men. We have already alluded to this training problem from the point of view of the entrepreneur, but it is more significant when seen as a social problem in the context of development. Between the alternatives of expanding new plant facilities not directly integrated into an operating structure, and moving into multi-shift operations it is clear that the former would have many more problems in developing a management staff. If expansion can be accomplished within the firm's production system and under present supervision, the following criticisms may not apply as forcibly.

In the first place, the operating managers can assign experienced men to second shift operations who will run things and train others at the same time. Management training is far more difficult if it is done in a new plant which must solve many more production problems before it gets into smooth operation.

Second, the number of management positions that must be filled in a second shift would generally be less than those needed in a new operation. The positions of plant manager, purchasing agent, chief engineer, chief maintenance engineer, chief of quality control are just a few of those that can be conserved in a multi-shift operation in many plants but might be needed in new firms or the non-contiguous expansions.

Third, there are usually advantages in working through a co-ordinated and organized group of managers. Where firms have had to draw men from a tight labour market, or the government has had to "borrow" men from established firms, the quality is often lower and they must be welded into a team first before they can be effective. All of these factors add to the delay before new facilities can be used optimally. Assuming equal quality of capital equipment, there seem to be many advantages in using capacity fully where the available management skills are to be applied optimally. If the choice is between new equipment that is superior to old that could be used on a second or third shift, a society must calculate the alternative uses of the capital elsewhere, and in the estimate of relative efficiency it must consider the cost differences due to the training and organization periods for each alternative.

Fourth, emphasis on a programme of better utilization of capacity might help inculcate in managements new approaches to the planning and co-ordination of their operations. The tendency to invest and expand while idle capacity exists in an industry is at times symbolic of static and short-sighted management attitudes. One cannot ignore the fact that expansions with underutilized capacities are often indicative of the entry of new firms into the market which allows for the maturation and widening of the entrepreneurial and management groups. The process can breed a healthy competition that might stimulate improvements in management techniques which have long-run implications for the entire system. The choice between the capital expansion and multi-shift operations is a matter of weighing the alternative costs and gains both in the short and long-runs. Even considering these, it appears that the conditions in most underdeveloped countries now would favour the use of multi-shift operations in preference to the further expansion of investments in most fields where the alternatives are present.

(3) *Implications for Employment*

Most underdeveloped countries are concerned with expansion of employment opportunities as a basic goal of economic growth. Yet the over-enthusiasm for new investments, neglecting improved utilization of existing capacity seems to reflect an inadequate appreciation of the employment and growth potential inherent in capacity utilization. (This argument seems to apply to other available resources in underdeveloped countries as well as industrial equipment). Multi-shift operations often offer considerable scope for augmenting employment without involving additional capital expenditures of a substantial nature. It has the effect of lowering the incremental capital-labor ratio and the incremental capital-output ratio for the economy as a whole. Again, where rationalization or labour has been obstructed by difficulties in providing employment for displaced labour, multi-shift operations offer an effective way out.

The fact that underdeveloped countries have generally lagged behind in capacity utilization need not necessarily imply ignorance on the part of managers and administrators of the advantages outlined above. A variety of limiting factors may be present in their economies which make it difficult to move to this goal. It is evident from Indian data that multi-shift operations have increased in number during the last decade. Further attack on the problem will require the efforts of both managers and public administrators.

III. Patterns of Capacity Utilization in India, 1951-59

(a) *The Indices of Capacity Utilization*

The analysis of capacity utilization in this paper makes use of a number of indices that have been formulated to study the overall industrial picture. It also depends on a specific industry by industry study to highlight some of the details. The indices of capacity utilization discussed below are based on the *Monthly Statistics of Production of Selected Industries of India for February 1960*,[2] issued by the Central Statistical Organization. Seventy-five industries have been included in the capacity indices and we have excluded only those for which installed capacity data are not available. (The larger group of new industries which are not included in the official production index, but has recently been released by Central Statistical Organization is not part of our study).

The period from 1951 through 1959 is of major importance for it covers the First Five Year Plan and approximately four years of the Second. It has been a period of fairly rapid industrial growth but also one of serious foreign exchange shortages during the last two years.

(1) *The Average Utilization of Capacity Index* I_{ac}

A standard statistical procedure has been followed to form each of the capacity indices used in this paper. The "average utilization of capacity rate" is based on the reported installed capacities on a three shift basis for 17 industries, a two shift basis for two industries, and a one shift basis for the remaining fifty-six. This reporting pattern reflects the usual shift utilization of the industries, but in recent years several have moved from one to two shifts. The monthly installed capacity estimate for each year was divided into the average monthly output for the same year to provide an "average utilization of capacity rate" for each industry.

The "average utilization of capacity rate" for each industry has been weighted by the value added weights used in the official

[2] Referred to hereafter as *Monthly Statistics*.

production index to yield the "Average Utilization of Capacity Index" (I_{ac})

$$I_{ac} = \frac{\Sigma (O'_n W')}{\Sigma (C'_n W')} \times 100\%$$

Where: O'_n is the average monthly output of the i-th item in the n-th year;

C'_n is the average monthly installed capacity as reported for i-th item in the n-th year;

W' is the value added weight for the i-th item as used in the official index of industrial productions.

2. *Average Utilization of Potential Capacity Index* (I_{apc})

Capacity for most industries (56) are reported on a single shift basis. The 19 multi-shift reporters constitute slightly over two-thirds of the entire index. To estimate the production potential with fuller utilization of capital equipment we have formed a second index based on the assumption that all industries currently reporting on a single shift basis could be expanded to a two shift operation. This index would provide an estimate of utilization of two-or-three shift (potential) capacity for each industry. The ratio of average monthly production to the potential capacity (actual capacities for industries already on two or more shifts) provides an "average utilization of potential capacity rate" for each industry. An "Average Utilization of Potential Capacity Index" (I_{apc}) can be formed by weighting these ratios by the proper value added weights.

$$I_{apc} = \frac{\Sigma (O'_n W')}{\Sigma (C'_n W')} \times 100\%$$

Where C'_n is the potential capacity for two shift operations of all firms previously reporting on a one shift basis, and two or three shifts for all others.

3. *Maximum Utilization of Capacity Index* (I_{mc})

The average monthly production rate for an industry will not reflect the maximum production levels in peak months. This difference may be considered by forming an index based on the maximum monthly production in a year instead of the average monthly production. This variation can be applied on I_{ac} or I_{apc}. We have computed this variation in I_{mc} to form a "Maximum Utilization of Capacity Index" for 1951 and 1959 to give us some insights into the differences between average and maximum utilization rates attributed to variations due to seasonality, inadequate planning of production, delays

in the deliveries of raw materials, shortages of foreign exchange that may delay supplies, and equipment failures. Our data do not allow us to measure the influences of each of these factors but an aggregated indicator of this kind can provide us with some further evidence of industrial utilization patterns.

(b) *The Average Utilization of Capacity Index, 1951-59*

Improved utilization of industrial capacity in the organized sector during the period 1951-59 is apparent from the upward movement of I_{ac} (Table I, Chart I). About 90% of the industries studied have been making better utilization of capacities in the second half of the decade, and except for the interruption in 1958, reflecting the foreign exchange crisis and the recession in textile and jute manufactures, the index has demonstrated steady increases. Because of the heavy weight of textiles and jute industries in the index, we have removed them to give a better picture of the pattern of capacity utilization of other industries. It is clear that textiles and jute led the others in utilization of capacity rates for most of the decade but in 1959 the relationship was reversed. This was to be expected because the established textile and jute industries had had their capacities limited to already established levels by Government decision while the industries in such sectors as chemicals, engineering goods, and metals were being expanded rapidly. (During these gestation periods it is difficult to maintain full utilization in the latter industries even if it had been intended). With a relatively fixed capacity and growing internal (and for a time export) demand, the textile industry has been pushed to fuller utilization levels.

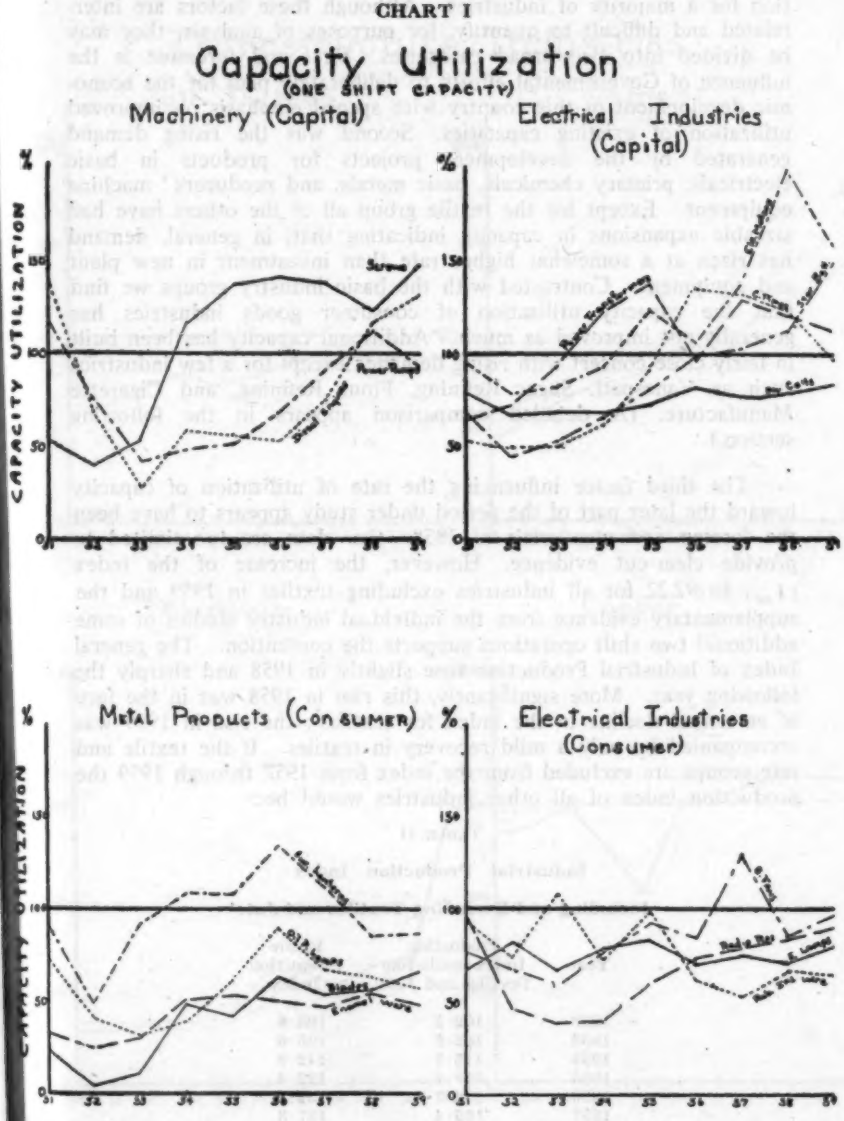
TABLE I

Average Utilization of Capacity Index 1951-59 *

Year	Entire Index	Index Excluding Textiles and Jute
1951	74·62	75·84
1952	76·99	69·14
1953	75·36	62·88
1954	82·27	76·06
1955	87·52	83·14
1956	92·16	88·74
1957	92·29	88·77
1958	89·12	87·03
1959	91·53	92·22

* Computed from data in *Monthly Statistics*, February, 1960.

CHART I


Capacity Utilization
(ONE SHIFT CAPACITY)
Machinery (Capital)
Electrical Industries (Capital)
Metal Products (Consumer)
Electrical Industries (Consumer)
CAPACITY UTILIZATION
%

A number of factors led to the steady improvement in utilization for a majority of industries. Although these factors are interrelated and difficult to quantify, for purposes of analysis, they may be divided into two broad categories. First and foremost is the influence of Governmental efforts to deliberately plan for the economic development of this country with special emphasis on improved utilization of existing capacities. Second was the rising demand generated by the development projects for products in basic electricals, primary chemicals, basic metals, and producers' machine equipment. Except for the textile group all of the others have had sizeable expansions in capacity indicating that, in general, demand has risen at a somewhat higher rate than investment in new plant and equipment. Contrasted with the basic industry groups we find that the capacity utilization of consumer goods industries has generally not improved as much. Additional capacity has been built in fairly close concert with rising demands except for a few industries such as Vanaspati, Sugar Refining, Flour Refining, and Cigarette Manufacture. (A detailed comparison appears in the following section.)

The third factor influencing the rate of utilization of capacity toward the later part of the period under study appears to have been the foreign exchange crisis of 1958. Our data are too limited to provide clear-cut evidence. However, the increase of the index (I_{ac}) to 92.22 for all industries excluding textiles in 1959 and the supplementary evidence from the individual industry studies of some additional two shift operations supports the contention. The general Index of Industrial Production rose slightly in 1958 and sharply the following year. More significantly, this rise in 1958 was in the face of an actual decline in the index for textiles; the rise in 1959 was accompanied by only a mild recovery in textiles. If the textile and jute groups are excluded from the index from 1957 through 1959 the production index of all other industries would be:

TABLE II

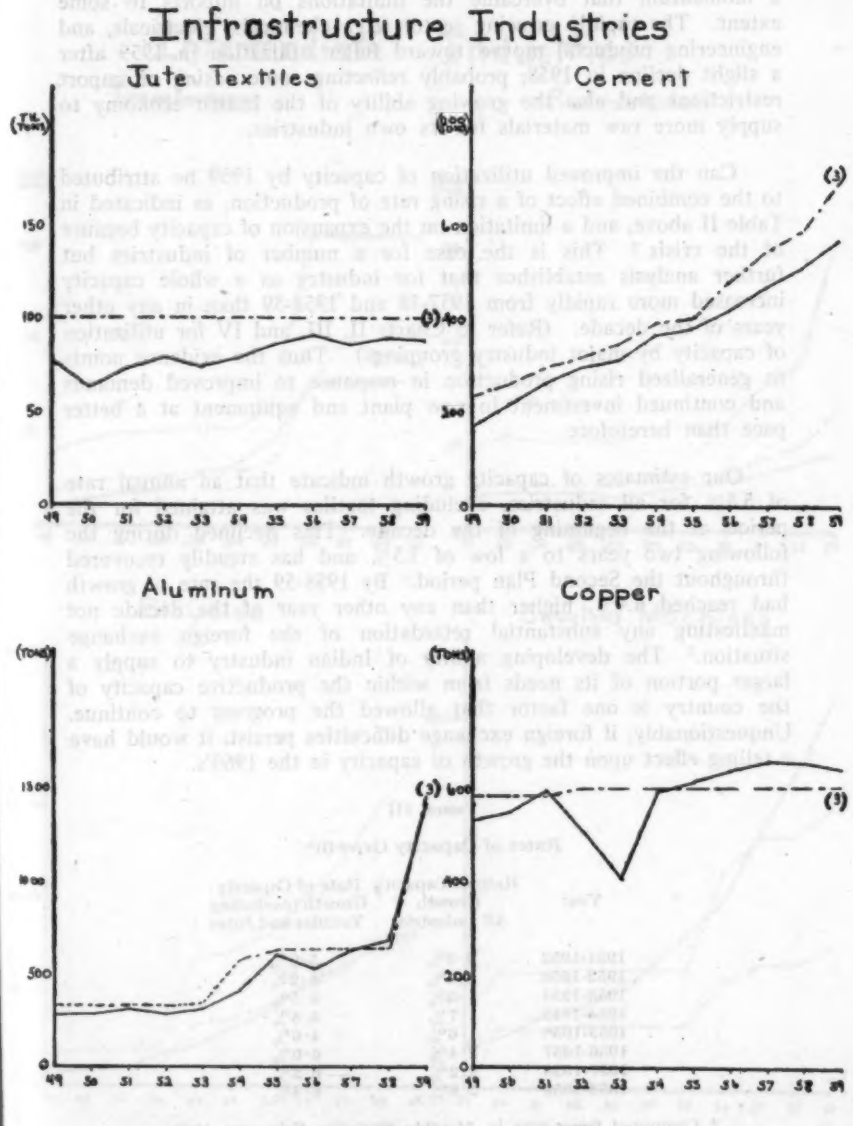
Industrial Production Index

Including and Excluding Textiles and Jute*

Year	Production Index (excluding Textiles and Jute)	Entire Production Index
1952	102·5	103·6
1953	102·6	105·6
1954	116·1	112·9
1955	129·1	122·4
1956	142·7	132·6
1957	155·4	137·3
1958	162·1	139·7
1959	182·1	151·5

* Computed from data in *Monthly Statistics*, February, 1960.

CHART II


Infrastructure Industries
Jute Textiles
Cement
Aluminum
Copper
(3)
(2)
(1)
(3)
(1)
(3)
(1)
CAPACITY UTILIZED
CAPACITY REPORTED (Number in parenthesis refers to number of shifts)

It is evident that the organized industrial sector had generated a momentum that overcame the limitations on imports to some extent. The rapidly growing sector (*e.g.*, chemicals, electricals, and engineering products) moved toward fuller utilization in 1959 after a slight decline in 1958, probably reflecting some easing of import restrictions and also the growing ability of the Indian economy to supply more raw materials for its own industries.

Can the improved utilization of capacity by 1959 be attributed to the combined effect of a rising rate of production, as indicated in Table II above, and a limitation on the expansion of capacity because of the crisis? This is the case for a number of industries but further analysis establishes that for industry as a whole capacity increased more rapidly from 1957-58 and 1958-59 than in any other years of the decade. (Refer to Charts II, III, and IV for utilization of capacity by major industry groupings). Thus the evidence points to generalized rising production in response to improved demands and continued investment in new plant and equipment at a better pace than heretofore.

Our estimates of capacity growth indicate that an annual rate of 5.8% for all industries, excluding textiles was attained for the period at the beginning of the decade. This declined during the following two years to a low of 3.5% and has steadily recovered throughout the Second Plan period. By 1958-59 the rate of growth had reached 6.4%, higher than any other year of the decade not manifesting any substantial retardation of the foreign exchange situation.[3] The developing ability of Indian industry to supply a larger portion of its needs from within the productive capacity of the country is one factor that allowed the progress to continue. Unquestionably, if foreign exchange difficulties persist, it would have a telling effect upon the growth of capacity in the 1960's.

TABLE III

Rates of Capacity Growth*

Year	Rate of Capacity Growth All Industries	Rate of Capacity Growth (excluding Textiles and Jute)
1951-1952	2·3%	5·9%
1952-1953	1·6%	4·2%
1953-1954	1·3%	3·5%
1954-1955	1·7%	4·8%
1955-1956	1·6%	4·6%
1956-1957	2·4%	6·0%
1957-1958	2·2%	6·2%
1958-1959	2·8%	6·4%

* Computed from data in *Monthly Statistics*, February, 1960.

[3] It is possible that in the absence of the crisis, the growth would have been even greater.

CHART III

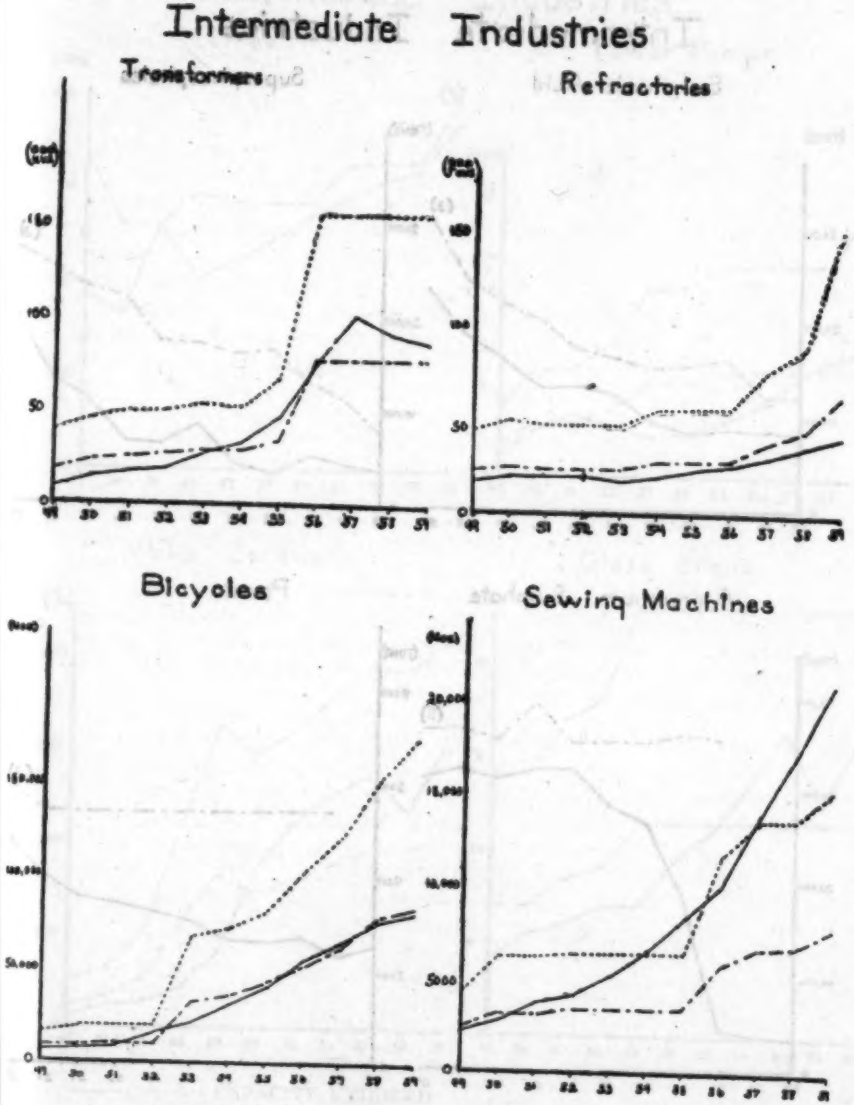

Intermediate Industries
Transformers
Refractories
Bicycles
Sewing Machines

CHART III—*contd.*

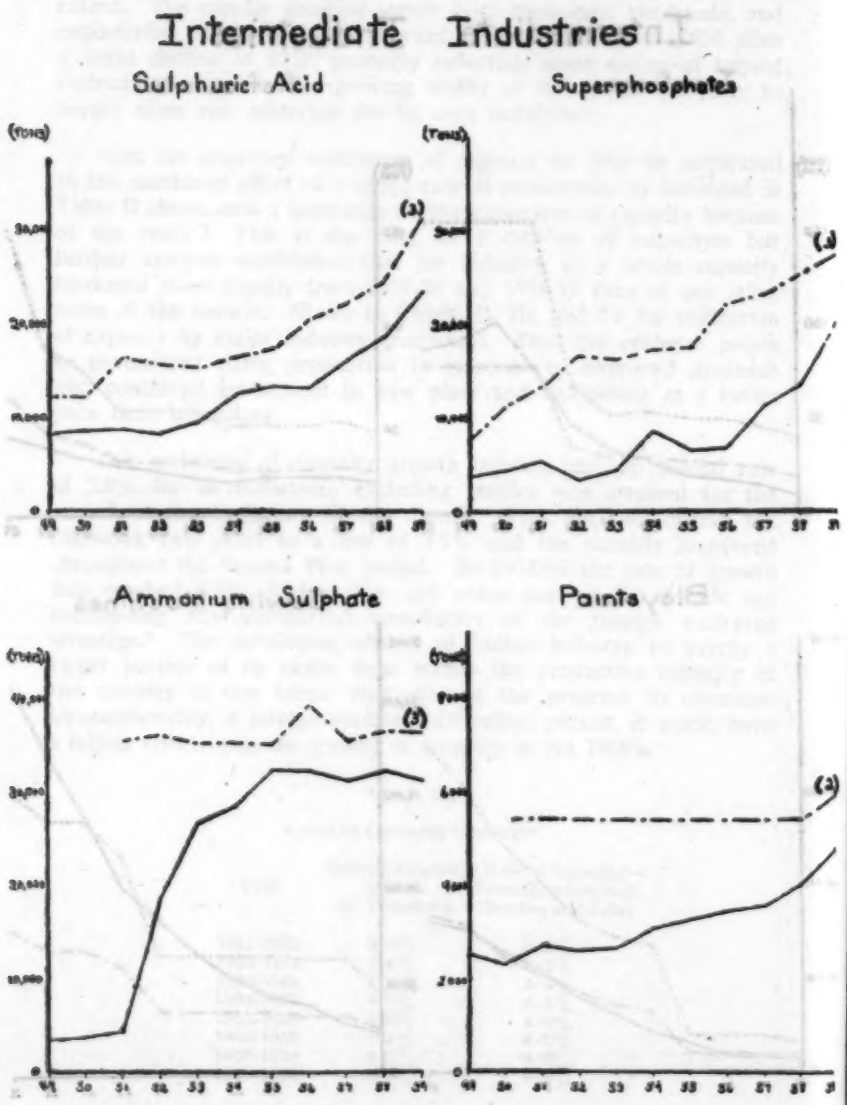
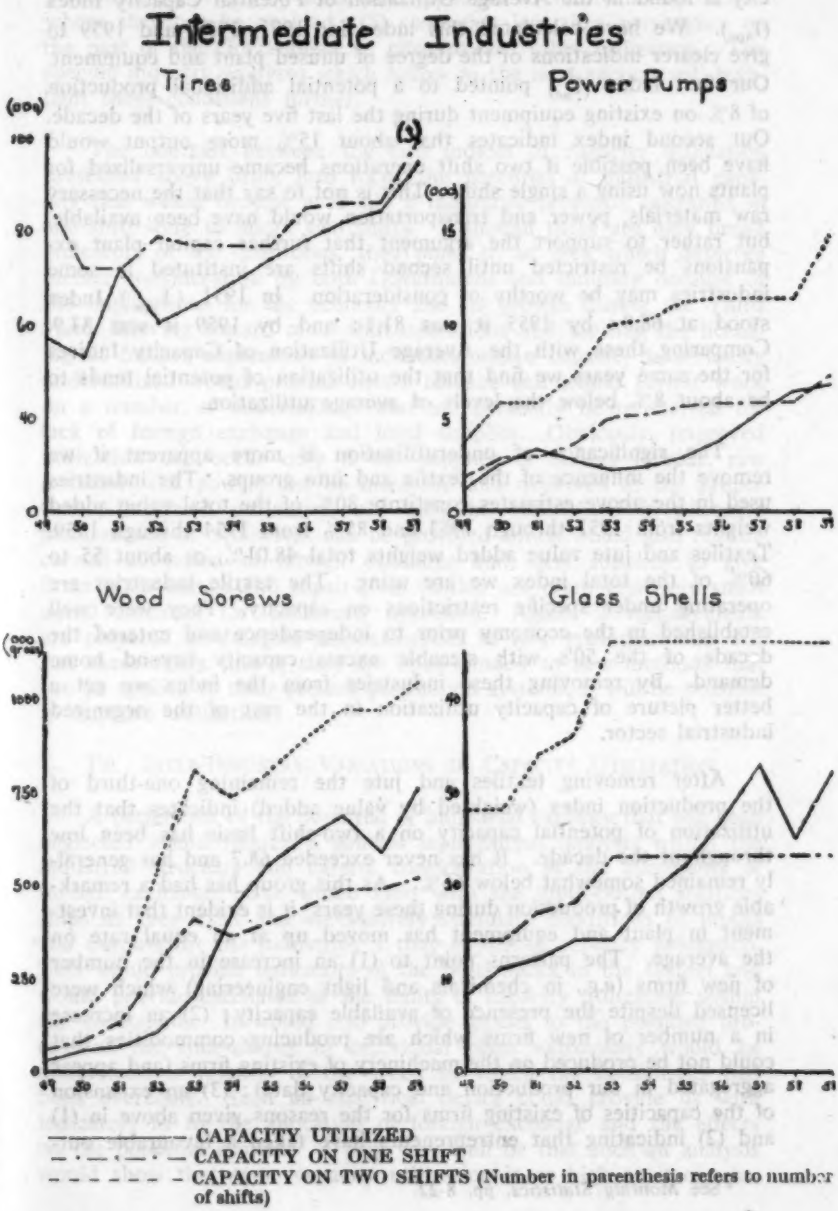


CHART III—*contd.*



A far more realistic measure of the rate of utilization or capacity is found in the Average Utilization of Potential Capacity Index (I_{apc}). We have calculated this index for 1951, 1955, and 1959 to give clearer indications of the degree of unused plant and equipment. Our first index (I_{ac}) pointed to a potential additional production of 8% on existing equipment during the last five years of the decade. Our second index indicates that about 15% more output would have been possible if two shift operations became universalized for plants now using a single shift. This is not to say that the necessary raw materials, power and transportation would have been available, but rather to support the argument that further capital plant expansions be restricted until second shifts are instituted in some industries may be worthy of consideration. In 1951 (I_{apc}) Index stood at 68.8; by 1955 it was 81.1; and by 1959 it was 83.9. Comparing these with the Average Utilization of Capacity Indices for the same years we find that the utilization of potential tends to be about 8% below the levels of average utilization.

The significance of underutilization is more apparent if we remove the influence of the textile and jute groups. The industries used in the above estimates constitute 80% of the total value added weights from 1951 through 1953 and 85% from 1954 through 1959. Textiles and jute value added weights total 48.01%, or about 55 to 60% of the total index we are using. The textile industries are operating under specific restrictions on capacity. They were well established in the economy prior to independence and entered the decade of the 50's with sizeable excess capacity beyond home demand. By removing these industries from the index we get a better picture of capacity utilization in the rest of the organized industrial sector.

After removing textiles and jute the remaining one-third of the production index (weighted by value added) indicates that the utilization of potential capacity on a two-shift basis has been low throughout the decade. It has never exceeded 68.7 and has generally remained somewhat below 66%. As this group has had a remarkable growth of production during these years[4] it is evident that investment in plant and equipment has moved up at an equal rate on the average. The patterns point to (1) an increase in the number of new firms (*e.g.*, in chemicals and light engineering) which were licensed despite the presence of available capacity; (2) an increase in a number of new firms which are producing commodities that could not be produced on the machinery of existing firms (and appear aggregated in our production and capacity data); (3) an expansion of the capacities of existing firms for the reasons given above in (1) and (2) indicating that entrepreneurs have taken a favourable out-

[4] See *Monthly Statistics*, pp. 8-22.

look toward the future as well as present demand conditions; (4) persistent opposition by some firms to move to multi-shift operations where they can be avoided; (5) somewhat less than persistence on the part of the Government to push toward fuller utilization. The specific industry analyses which follow in the next section will highlight these conditions further.

The contrast between the two indices of capacity utilization presented above bring into focus the potential of industrial capacity that would become available if industries presently operating in one shift were to adopt two shifts. Although these are only broad indicators of the conditions, they point to an area which deserves further consideration by both Government and industry because of the implications for the economy and its growth during the Third Plan. Moving toward multi-shift operations and limiting the licensing of further expansions in industries where capacity is seriously underutilized would provide better balance and would permit work on a number of undertakings that are presently being shelved for lack of foreign exchange and local supplies. Obviously, improved utilization can occur only if the supplies of factors (labour, raw materials and power) can be increased and delivered at the proper time. Improved utilization can only be maintained if adequate maintenance of equipment can be provided which would also require careful allocation of foreign exchange and local supplies to give firms maintenance and repair item (which are often relatively small units) essential for continued operation. Again, if managements are prepared to delegate responsibilities to new managers who will run these shifts, and if they are open-minded to new methods that can be applied to their present production systems, it will be possible to improve utilization.

IV. Inter-Industry Variations in Capacity Utilization

A better test of the potential of industrial capacity that has been neglected would require a general input-output analysis within the industrial structure and careful consideration of the allotments of foreign exchange. One would start with the input-output relationships as they exist and successively stimulate conditions of inputs and outputs for the industries if they expanded capacity utilization. This would provide indicators of the bottlenecks in the system and would provide estimates of the limits of capacity utilization within the constraints. It would also provide guides to the planning process as the time-shapes of individual plant expansions would be understood in relation to the speed by which the bottlenecks had been overcome. Such an analytical device could provide us with indicators as to the allocation of foreign exchange and the effects on the potential growth. It may very well be that such an analysis would show that some capacity utilization is as high as it can be,

CHART IV

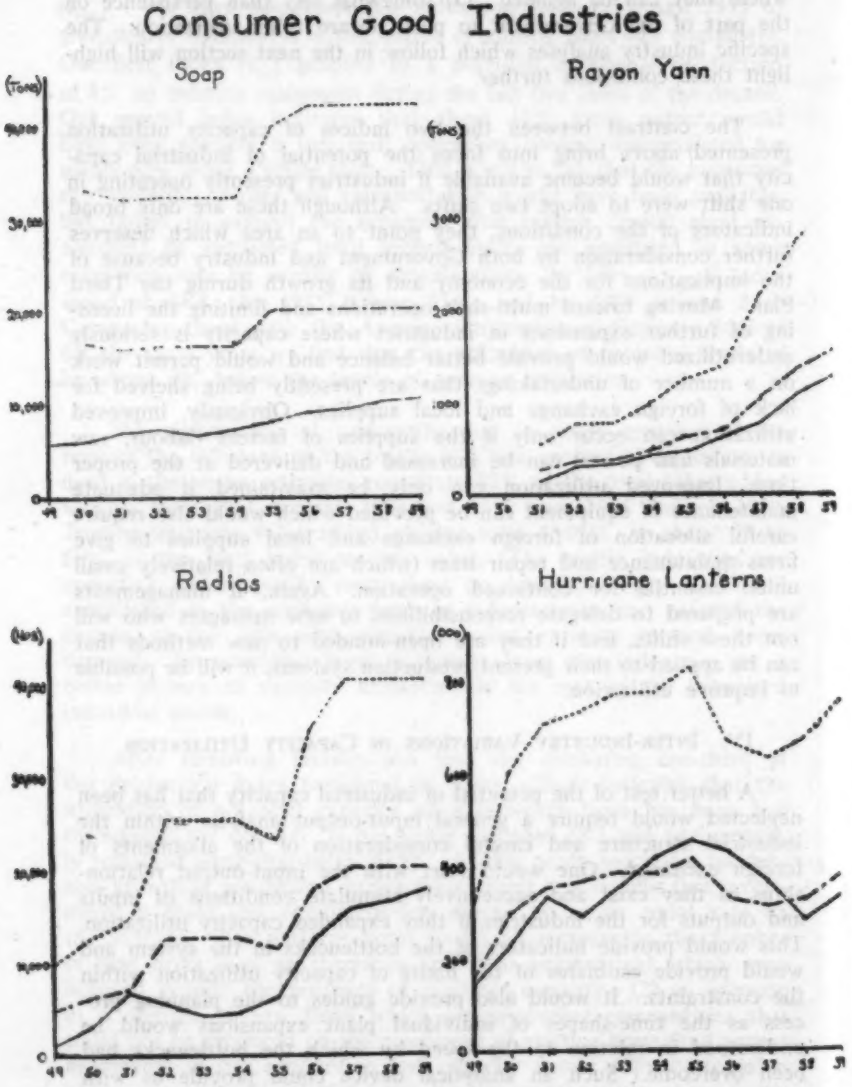
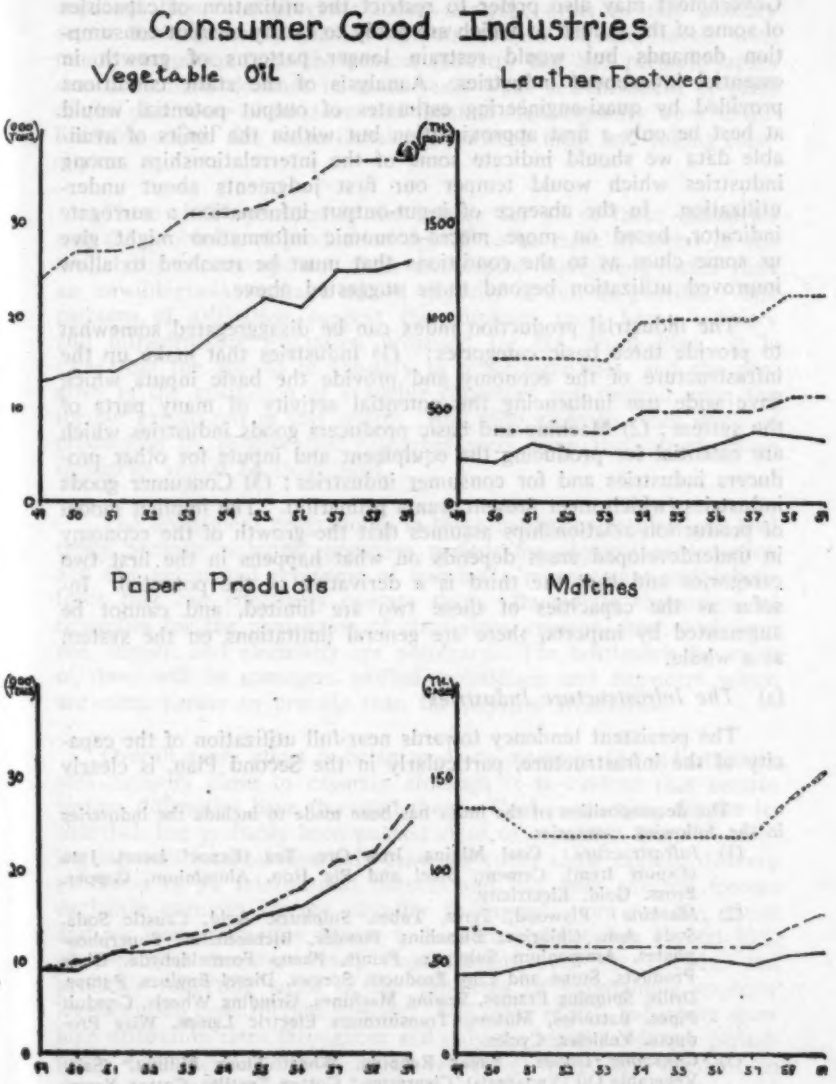

Consumer Good Industries
Soap
Rayon Yarn
Radios
Hurricane Lanterns

CHART IV—*contd.*



given the constraints imposed by certain primary industries. The Government may also prefer to restrict the utilization of capacities of some of the industries which are ready to satisfy current consumption demands but would restrain longer patterns of growth in essential investment industries. Aanalysis of the static conditions provided by quasi-engineering estimates of output potential would at best be only a first approximation but within the limits of available data we should indicate some of the interrelationships among industries which would temper our first judgments about underutilization. In the absence of input-output information a surrogate indicator, based on more macro-economic information might give us some clues as to the conditions that must be resolved to allow improved utilization beyond those suggested above.

The industrial production index can be disaggregated somewhat to provide three basic categories: (1) Industries that make up the infrastructure of the economy and provide the basic inputs which have wide use influencing the potential activity of many parts of the system ; (2) Machine and basic producers goods industries which are essential for producing the equipment and inputs for other producers industries and for consumer industries ; (3) Consumer goods industries (which meet present wants primarily). The implicit model of production relationships assumes that the growth of the economy in underdeveloped areas depends on what happens in the first two categories and that the third is a derivative of the potential. Insofar as the capacities of these two are limited, and cannot be augmented by imports, there are general limitations on the system as a whole.

(a) *The Infrastructure Industries*[5]

The persistent tendency towards near-full utilization of the capacity of the infrastructure, particularly in the Second Plan, is clearly

[5] The decomposition of the index has been made to include the industries in the following categories :

(1) *Infrastructure :* Coal Mining, Iron Ore, Tea (Export Item), Jute (Export Item), Cement, Steel and Pig Iron, Aluminium, Copper, Bross, Gold, Electricity.

(2) *Machine :* Plywood, Tyres, Tubes, Sulphuric Acid, Caustic Soda, Soda Ash, Chlorine, Bleaching Powder, Bichromates, Superphosphates, Ammonium Sulphate, Paints, Pheno Formaldehyde, Glass Products, Stone and Clay Products, Screws, Diesel Engines, Pumps, Drills, Spinning Frames, Sewing Machines, Grinding Wheels, Conduit Pipes, Batteries, Motors, Transformers Electric Lamps, Wire Products, Vehicles, Cycles.

(3) *Consumer Goods :* Sugar Refining, Wheat Flour Milling,* Salt, Vegetable Oil (Vanaspati), Cigarettes,* Cotton Textiles, Cotton Yarns, Footwear (Leather),* Paper and Paperboard Products, Tanned Hides, Matches*, Soaps,* Rayon,** Liver Extracts,* Razor Blades.* Hurricane Lanterns,* Oil Pressure Lamps,* Enamelware, Fans, Radios,** Dry Cells,* Dipped Rubber Products,* Rubber Footwear.*

evident in an industrywise analysis. (See Chart II). As is to be expected from our previous index analysis, firms in this primary sector have generally pushed outputs toward capacity levels with minor exceptions (*e.g.*, the cement industry had had periodic lapses due to demand declines in some years when retrenchment of parts of the plan were undertaken and finished steel capacity went unutilized for a time due to an imbalance between ingot and rolling capacity).

Three shift operation is the pattern for all of these industries and the problems of production appear to be more in terms of the availability of management skills and capital equipment rather than an unwillingness to make use of capacity as full as possible. The patterns of utilization support the emphasis upon heavy industry and infrastructure expansion proposed for the Third Plan. It is clear that the growth in capacity in other industries, and the progress in the utilization of available capacities will depend upon the further expansions in this sector. Any fillip given to other levels of production by re-allocating resources away from the infrastructure industries would be short-lived.

The investment programmes in these industries require long lead times because of longer gestation periods for physical construction and the aggravated problems of training a management and labour force that can effectively operate them. Immediate expansions of capacities for the production of aluminium, cement, steel, coal, iron ore, copper, and electricity are necessary. The bottleneck for most of these will be managers, skilled technicians and engineers which are often harder to provide than the physical structures.

Overall every effort is being made to maintain the industries in this category close to capacity although it is evident that certain serious difficulties have thwarted them. Coal production, despite its shortfall, has probably been pushed close to capacity. Iron ore mining has met internal demands generally (with some railway delivery problems of an intermittent nature) and has only affected foreign exchange earnings by the inability to expand more rapidly. Steel and pig iron production appear to have ranged between 80 and 90% of capacity, showing steady improvement over the decade, and probably reflecting some of the problems of maintaining capactiy levels during construction periods. The other metals industries show high utilization rates throughout and only the cement industry periodically falls below 90% (usually reflecting temporary declines in demand). The two export items, tea and jute, cannot be analyzed and have been included because they are large foreign exchange earners. Electricity generated appears to be one laggard in the group and seems to reflect the production patterns of industry. Utilization of capacity has risen and the pressures on capacity dur-

ing certain times of the day are apparent from the classification of certain industrial areas as being power shortage areas. However, power utilization can be improved in some of these regions if plants used the second shift period more intensively.

(b) *The Intermediate (Producers Goods) Industries*

The Machine and Producers' Goods group does not reflect the same intensive use of capital equipment. Three shift or even two shift operations seem to be less widespread, being restricted generally to the basic chemicals and rubber industries. One shift utilization has improved from about 60% during the first half of the decade to 81% in 1957 and 82% in 1959. On an estimated two shift basis it seems that the category has an utilization rate of less than 60% even during the late years of the Second Plan. These rates would be improved if the Automobile industry were eliminated. There may be some justification in removing this industry because the restrictive policy on passenger car production has been severe and this industry probably should not be included in the category. Furthermore, the capacity of the industry has been steadily cut back since 1949. If this industry is excluded, the utilization rate shows an improvement from the 70% range in the first five years to about 87 (1958) to 89% (1959) on a single shift basis. If estimated for a two shift basis the category utilization rate is close to 55 or 60% for the entire period.

The evidence of capacity utilization for the intermediate industries indicates a mixed picture that is not consistent. The chemical group (Soda Ash, Chlorine, Bleaching Powder, Paints, Sulphuric Acid, Caustic Soda, Superphosphates, Ammonium Phosphate and Rubber Products) operate on three shifts with few exceptions. In nearly all cases output has expanded in concert with capacity and with relatively short lags between them. With demand growing in the industrial sector, the further expansion of transportation, and the large needs for fertilizers, the outputs of this group of industries will continue to rise sharply as long as capacities are increased.

The conditions in the stone, clay and glass group appear to be of a different character. These industries (tiles, glass shells, laboratory glass, sheet glass, refractories, insulators and asbestos) are either working single shifts or are not utilizing full capacities on a multi-shift basis. In some of these industries the ratio of capacity to output must be high for technological reasons (*e.g.*, refractories) but this does not appear to be a warranted explanation for all. At least four or five of these industries had a capacity on a two shift basis as early as 1952 or 1953 to handle the demand levels of 1959. Despite this, expansions had been taking place as production moved toward single shift capacity levels, although after 1953 or 1954 a number of industries have not had any further expansions. The

continued expansion in refractories reflects the sharply growing demands for these commodities by steel, glass, and other industries.

Engineering commodities among the intermediate industries have experienced rapidly rising demands with minor exceptions. High rates of growth in demand have pushed a number of these industries into multi-shift operations (the manufacture of screws, conduit pipes, sewing machines, diesel engines); a number continued to maintain single shift activity despite very rapid sales increases (*e.g.*, bicycle manufacture). The other industries in the group (twist drills, grinding wheels, plywood, and power pumps) have had excessive capacities throughout the decade and have expanded these even though the capacities they had in 1951 or 1952 could have met the demands as late as 1958 or 1959.

The pressure towards two shift activity is also manifested in the electrical commodities group. These industries have sought to increase capacities to meet the growing demands but by the mid-year of the decade two shift operations had been adopted by a number of firms in at least half of the industries. The Power Transformer industry gives definite evidence of some of the recent demand cutbacks that have been induced by retrenching in private and public sector programmes which have been forced by the foreign exchange crisis. The industry had moved toward some two shift operations in a few firms and a large expansion of capacity was completed in 1956 to meet the growing demands. By the end of 1957 demand started to recede and continued to do so throughout 1959, leaving the second shift underutilized.

(c) *The Consumer Goods Industries*

The final group includes a number of industries that have existed in the Indian economy for the past few decades. Some of these entered the decade of the 50's with fairly large available capacities. The entire consumer group has enjoyed rising demands with minor periodic plateaux and downturns (*e.g.*, textiles and hurricane lanterns). As can be noted on Chart IV eleven of these industries (noted by an asterisk in the footnote on page 22) have increased capacities (including expansions and new firms) in response to growing demands although available capacities on two shift operations in the early part of the decade were sufficient to cover output levels reached in 1959. All of these have continued, by and large, on single shift operations.

A second sub-group (noted by a double asterisk in the footnote on page 22) has expanded capacities and has continued to avoid second shift operations despite very high growth rates in demand. Three industries (Textiles, Paper Products, and Enamelware) have

had little change in capacities and the latter two had large excess capacity even in 1959. Textiles, Paper Products, and Vanaspati are the three industries operating on three shifts in the consumer industry group; the last of these has maintained a wide spread between installed capacity and production.

(d) *Summary*

Our three-part classification brings out the distribution of underutilization rather clearly). The consumer industries have expanded (both through new and old firms) far too rapidly to be able to achieve an intensive utilization of their capital equipment. Limited demand at market prices (after capacity had been expanded) may have been one restriction; limited supplies of raw materials and replacement parts have certainly set limits for others. Considering the limied productive capacities of other industries and the infrastructure, one might conclude that even with more raw material resources and spare parts the imbalance in the industrial and infrastructure would have soon placed limits on growth. It would have also meant limiting future growth which would depend on early investment in the primary industries, many of which have long gestation periods. The extremely high utilization rates in the infrastructure group, with the exception of electricity generation which could be improved if some firms moved to two shift production to take advantage of the off-period potential that is now available, puts severe limits on the general growth of production.

Utilization of two shift capacity is high in most of the intermediate industries which are essential for further expansions in the rest of the system. Although the aggregate measures of capacity underutilization point to possible industrial expansion, the disaggregation indicates that prospects are even more limited and in some cases would be detrimental for the longer patterns of development. The evidence points to some misallocations of capital resources during the 1950's in both the consumer and intermediate industries which could have been advantageously used in other sectors or industries. But once having committed the resources the system must evolve with these imbalances until the productive capacities elsewhere have been increased to once again allow generalized expansions throughout. During this coming period, which will take place under conditions of short internal and external resources, further allocations of capital investments must clearly be made with full consideration of the essential balances that must be maintained and of the fact that a large number of industries are still tied to the one-shift concept.

We are led, then, to the conclusion that while something can be done presently in selected industries to improve the utilization

of capacities, in many instances, as in the consumer goods group, this might call for diversions of resources that would tax the system further. The major implications of the analysis is in terms of the future allocations of investment. Pressures must be brought to bear upon industries that have idle capacities to force their utilization before additional investments are permitted. Furthermore, the Government agencies administering the allocation of foreign exchange and local resources must also be cognizant of the restrictions that can be imposed on capacity utilization by inadequate consideration of applications for relatively small replacement parts and certain factory supplies and raw materials. The Government must also recognize that some of its employment may have the reverse effect. Employers tend to resist assuming the additional labor force needed on a two shift operation if it means that they cannot readily lay off the men should the conditions of the market change. Finally, entrepreneurs must come to realize that multi-shift operations are not only essential for the economy which is trying to grow with extremely limited capital, but that it is also profitable to make fuller use of capital equipment in most industries. This often means that managers must change their attitudes toward the training of new men and the delegation of responsibilities to them.

V. Implications for Public Policy

The preceding analysis has brought to light some of the significant aspects of the problem of capacity utilization in Indian industries. The major findings of the study are the following:

(1) Indian industries, in general, have experienced substantial progress in the utilization of their capacity during the period 1951-59. The major exception was the year 1958 when the country was hit hard by a severe foreign exchange crisis and a general retardation of industrial activity. The trend toward improved utilization is a partial fulfilment of the organized policies of the Government of India expressed in the First Five Year Plan.

(2) Improvements in the levels of capacity utilization, however, do not tell us much about the extent of underutilization that exists in the economy. As a matter of fact, reporting capacity on a one-shift basis which is done by many Indian industries, tends to exaggerate the actual degree of capacity utilization achieved. With the aid of analytical tools such as the indices of potential capacity utilization and maximum utilization of capacity, we have been able

to show that in spite of the steady progress made in the utilization of capacity, the extent of underutilized facilities that exists in some but, some degree of underutilization is, of course, unavoidable.

(3) One has to probe beneath the surface of aggregate industrial data to gain insights into the patterns and variations that characterize individual sectors and industries. The present analysis shows that although there has been an overall improvement in the levels of capacity utilization, the progress has by no means been even in all industries. A significant result of the study is that the consumer goods industries, in contrast to the infrastructure and intermediate industries groups, have expanded far too rapidly to be able to achieve an intensive utilization of their capacity. It is clear then, that one of the restraints on increased production of consumer goods, and for that matter, on the future growth of the entire economy, is the limited productive capacities (which are already near full utilization) of the infrastructure and producer goods industries. An acceleration of the general growth of the economy can occur only if increased investments are made in these sectors so as to correct the existing structural imbalances. Our analysis, thus, provides additional evidence to support the argument for expanded investments in the infrastructure and intermediate goods sectors.

The major implications of the present study for public policy are in the realms of future allocations of investment and of minimizing underutilization of capacity in certain industries. Though these comments stem from our study of India's experience, their relevance to other underdeveloped countries cannot be ignored.

(1) The excess capacity that now prevails in several consumer goods industries points to the need for stricter Governmental measures to force such industries to utilize their idle capacity before additional investments are permitted. Such measures may involve more careful licensing, selective policies in the allocation of foreign exchange and local resources with a view to encouraging intensive utilization of existing capacity and revisions in employment laws so as to stimulate reluctant managements to undertake multi-shift operations.

(2) It is possible that inefficient management practices and attitudes act as a drag on efforts to improve the levels of capacity utilization. Traditional habits and ways of looking at things and ignorance of new possibilities may often prevent managements from trying anything new or different. Governments as well as private

organizations can play a significant role in fostering new attitudes and approaches among managers, as for instance, through management training programmes.

(3) The strikingly uneven patterns of capacity utilization prevailing in Indian industries warrant a closer look by responsible authorities and experts at the limiting factors at work in individual industries. Generalizations based on aggregative analysis often fail to unearth the peculiar problems and pressures affecting individual industries or sectors. A better understanding of these limiting factors will shed more light on the complex interrelationships of the economy and pave the way for improved decisions in the realm of public policy.

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SAMUEL PAUL

INDIA'S TRADE RELATIONS WITH EAST EUROPEAN COUNTRIES*; 1952-53—1959-60

A Study in Bilateralism

SHORTAGE of external resources may be said to be one of the important limiting factors affecting the rate of economic growth of India. Though industrial production during Second Five Year Plan is estimated to have increased by about forty per cent, and in the last year of the Plan, *i.e.*, in 1960-61, by more than twelve per cent, the rate of growth seems to have been arrested because of the scarcity of imports of capital goods.[1] Our export earnings have remained practically stationary while import requirements have been increasing at a very rapid rate (See Table I). In order to increase exports and to make possible a larger volume of imports of capital and intermediate goods, Government of India has taken various export promotion measures such as conclusion of bilateral agreements, establishment of export promotion councils for principal export items, concessions regarding inland freight and drawback of customs duties. The new measures adopted seek to increase India's exports by diversifying export structure and by establishing trade relations with new markets.

The purpose of the present paper is to study India's trade relations with East European countries, as conducted within the context of bilateral trade and payments agreements. The trade returns are studied over eight years 1952-53—1959-60, the years covered by the last four years of the First and first four years of the Second Five Year Plans. The emphasis is on the study of trade with the group as a whole, rather than with each country in isolation. In defence of such procedure we may say that India's payments agreements with eight countries under study are similar so far as terms of the agreements are concerned. Secondly, since our interest is in studying trade relations from the viewpoint of a bilateral agreement, conclusions are not likely to differ in any significant way by studying trade with each country separately. Limitation of space is another factor which makes a detailed, countrywise study rather impracticable. But as mentioned above, whatever conclusions we arrive at are not likely to be materially affected by such finer analysis. Incidentally, it may be noted that we are interested in India's trade relations and not all economic relations with East European countries.

*By East European countries we mean Soviet Union, Czechoslovakia, Poland, East Germany, Hungary, Roumania, Bulgaria and Yugoslavia.

[1] Sir Donald MacDougal—*India's Balance of Payments*, Economic Weekly, 22nd April 1961, p. 635.

Terms of the Agreements

Most of the agreements were signed during 1953 and 1954. The trade agreements in their early stage (before 1958) aimed at promoting trade "on the principles of equality and mutual benefit..... within the rules and regulations prevailing in both the countries." More specifically, they intend to raise the level of trade at a higher level on the principle of balanced trade. The payments conditions laid down that all payments would be made in Pound Sterling or in Indian Rupee whichever may be convenient to the signatory countries, and that the accounts would be kept in one or more authorised commercial banks. But if partner countries find it desirable, accounts may also additionally be kept with the Reserve Bank of India. All payments of commercial as well as of non-commercial nature were to be made through the rupee account. The outstanding balance was to be convertible either at demand or at the expiry of the agreement in Pound Sterling at the prevailing exchange rate.

The new payments agreements that have been signed with these countries since 1958 mark a new step towards strict form of bilateralism. According to the terms of new agreements all payments of commercial and mutually agreed non-commercial nature are to be made in non-convertible Indian Rupee. The balance at the expiry of the agreement, it is agreed, would be settled by movement of commodities within a period varying from six months to one year, and failing that in mutually accepted way. The tenure of present agreements is normally three years, but in case of Soviet Union it extends over a period of five years.

No explicit mention has been made of swing credit in the agreement. Since the balance, however, would be allowed to accumulate till the termination of the agreement to the credit of surplus country the deficit country would receive an automatic credit. This implicit, unlimited credit provision is subject to one offsetting provision. The purpose of the agreement is to achieve, as far as possible, balanced trade every year. To achieve annual balance, both parties agree to meet every year to renew and revise, if necessary, commodity schedules, and to discuss ways and means to achieve balanced trade. The commodity schedules as laid down in the agreement do not mention any quotas to be imported by the partner country. They are indicative lists of commodities the exporting country undertakes to supply if demanded by the other party. Trade in commodities other than those mentioned in the schedules is not prohibited.

The agreements with all countries except Bulgaria, German Democratic Republic and Yugoslavia make reference to shipping

clause whereby both parties agree to promote mutual shipping by endeavouring to exchange goods by their own ships. The agreements with East Germany, Hungary and Yugoslavia, lay down that in order to facilitate the implementation of the Agreement, meeting of representatives would be held at any party's request within forty-five days of the request. With Czechoslovakia, it has been agreed that attempts would be made to encourage triangular re-exports and multilateral transfer of balance. Finally, countries agree to encourage technical co-operation and assist India in her programme of industrial development.

Working of the Agreement

The figures of India's trade with these countries are presented in Table I in an aggregative form. That is to say, they are not disaggregated into trade in agreement articles and trade in non-agreement articles. The available trade statistics for 1958 indicate that the share of trade in agreement articles in total trade (exports plus imports) amounted to eighty four per cent. The ratio is not likely to differ significantly in other years for the simple reason that the commodity schedules are comprehensive in the coverage of items each country exports or intends to export. Secondly, no quotas are enforced by either partner—which suggests that there is no discrimination in favour of agreement articles. The distinction, moreover, is superfluous since all commercial payments are to be made in a common Rupee account. The only purpose this distinction serves is purely informative indicating that the commodities mentioned in the schedule are available for supply in exporting country.

TABLE I

Index numbers of India's trade with Eastern Europe

	India's total trade		Trade with Eastern Europe (1952-53 = 100)		Eastern Europe (1955-56 = 100)	
	Exports	Imports	Exports	Imports	Exports	Imports
1953-54	90	93	192	98	—	—
1954-55	99	108	199	367	—	—
1955-56	106	120	245	498	—	—
1956-57	106	174	967	1,462	395	294
1957-58	99	195	1,116	1,736	456	349
1958-59	96	163	1,581	1,398	646	281
1959-60	104	146	2,287	1,545	934	310

It may be observed from Table I that India's trade with East Europe has increased very rapidly during 1952-53 to 1959-60. Their share in India's exports increased from ·4 per cent in 1952-53 to nearly eight per cent in 1959-60. Actually exports to these countries remained at a low level till 1955-56 when their share was ·8 per

cent in India's total exports. Their share in India's imports, on the other hand, increased from ·3% in 1952-53 to 3·7% in 1959-60. In terms of Index numbers, the rise in trade with these countries appears extraordinarily high. The Index of India's exports (1952-53=100) was higher by four per cent in 1959-60, while it rose in case of Eastern Europe by nearly twenty-two hundred per cent. India's imports, on the otherhand, rose by forty-six per cent, while imports from Eastern Europe increased by 1445% during the same period. But a large part of this increase is in the nature of statistical illusion arising from the fact that trade started from a low initial level. If the base year is changed to 1955-56 the spurt in trade gets dampened, particularly in imports, but nevertheless it still remains very high. The importance of trade with these countries is markedly brought out when we look at figures of India's exports from countries other than Eastern Europe. It may be observed from Table I, column 11, that exports to the rest of the world were slightly lower during 1958-60 (average 557.8 crores) than during 1952-54 (average 567.3 crores).

The commodity composition of exports reveal that they have been predominantly confined to traditional commodities, *i.e.*, to those primary commodities falling under section 0 to 4 and to leather manufactures and textiles manufactures (sections 61 and 65) according to Standard International Trade Classification. In the year 1957, the share of exports in the groups to total exports to Eastern Europe was 91.5%, but in subsequent two years it declined to 95.2 and 94.9 per cent respectively. The corresponding figures for India's overall exports over the same period are 88.8, 92.3, and 92.8 per cent respectively. A negative conclusion may be drawn that non-traditional goods have failed so far to benefit from trade with these countries.

TABLE 2

India's Exports of Traditional Products 1957-1959

(Sections 0 to 4 and 61 and 65 of SITC)

Year	Share in India's overall exports	Share in total exports to Eastern Europe
1957	88·8	91·5
1958	92·3	95·2
1959	92·8	94·9

Among export commodities, hides and skins, mica, iron ore, spices, tea and jute manufactures have benefitted the most. Table II gives exports of twelve major commodities, which account for more than sixty-five per cent of India's exports to these countries. Their

share in total exports to Eastern Europe was as high as 90% in 1954-55, but subsequently as trade became diversified it started declining and it stood at 66% in 1959-60. Export of spices increased from Rs. 61 lakhs in 1954-55 to Rs. 280 lakhs in 1959-60, while that of raw hides and skins increased from Rs. 154 lakhs to Rs. 752 lakhs. Exports of tea and of jute manufactures which were not exported at all in 1954-55, increased very fast and stood at Rs. 910 lakhs and Rs. 358 lakhs in 1959-60 respectively. Export of mica also registered a spectacular growth rising from Rs. 20 lakhs to a new level of Rs. 181 lakhs over the same period.

When we study these statistics in relation to total exports of these commodities we find that share of exports to Eastern Europe has been continuously rising. The share is very high in case of hides and skins (67% in 1959-60) and iron ore (29.6%) while in case of spices (19.3%), mica (16.6%) and vegetable oils (13.00%) it may be considered significant. Share of tea and jute manufactures which were almost naught during 1954-56, rose to 7.0 and 2.7% respectively. It may be said that by providing market and additional demand for India's traditional exports, trade with Eastern Europe has helped her not only by way of increase in exports but also by improving terms of trade or atleast by not allowing it to deteriorate any further.

Imports from these countries reveal a very interesting pattern. They have remained more or less stationary in last four years under study, but this has been in tune with India's overall imports. Actually their percentage share in India's imports increased from 2.9 per cent in 1956-57 to 3.7 per cent in 1959-60. Imports in 1957-58 are higher because of imports of steel manufacturing machinery from Soviet Union for the erection of Bhilai Steel Plant. Imports have been practically confined to manufactured commodities. The share of sections 5 to 9 according to SITC classification, have risen from 42.3% in 1954-55 to 84.2% in 1955-56, and remained constantly above 95% during 1957, 1958 and 1959. Imports in sections 5 to 7, *i.e.*, chemicals, manufactured goods and machinery and transport equipment have been responsible for more than 95 per cent of total exports during 1957 and 1958 and far 93.7 per cent in 1959. A still finer breakdown records that imports of base metals, manufactures of metals and of machinery and transport equipment (sections 68, 69 and 7) were above 75 per cent of total imports in all three years.

A comparison with corresponding figures for India's total imports indicates that the share of imports of capital goods is much larger in the case of Eastern Europe than in India's aggregate imports. By itself this suggests very little and is inadequate to draw any firm conclusion. Other imports such as raw cotton, raw jute and petroleum products may be considered equally necessary for smooth functioning of

existing industries and economic growth. Similarly, food imports during these years may be said to be one of the most essential items to hold inflation within limits. The Indian average of imports of capital

TABLE 3

Structure of India's Imports from Eastern Europe

	Share of sections (SITC) 5 to 9 in total imports	Share of sections 5 to 7 in total exports	Share of sections 68, 69 and 7
1957	99·7 (3814)*	97·9 (3746)	86·9 (3323)
1958	99·8 (3484)	96·3 (3361)	86·1 (3004)
1959	97·7 (3315)	93·7 (3178)	76·6 (2598)
*Figures in brackets refer to total in lakhs of rupees Shares of above sections in India's overall imports.			
1957	68·4 (69·9)*	65·5 (66·9)	52·5 (53·6)
1958	60·5 (71·1)	57·2 (69·0)	46·2 (55·8)
1959	62·4 (72·4)	60·3 (69·9)	46·3 (53·8)

*Figures in brackets relate to imports excluding food imports, section 04.

goods after deducting food imports from aggregate imports was 54% in 1959 a fact which is sufficient to indicate the rising pace of industrialization in the country. But the comparison yields one useful result. Export earnings obtained from bilateral partner countries have not been utilized for imports of consumer goods or inessential goods. Instead it enabled India to have a larger volume of imports and preserve her convertible currency for imports of capital goods from other industrial countries. One may even go to the extent of saying that export earnings from these countries have been well utilized for the purpose of capital formation in India.

Though the trade has been conducted under bilateral payments arrangement, it has shown no indication of having annual balance. The ratio of net trade balance to trade (exports plus imports divided by two) averaged ∓ 48.3 per cent per annum during last four years 1952-53 to 1955-56, and $\pm$ 33.8 per cent during 1956-57 to 1959-60. If we take the ratio of sum of net balance to trade over first four years it declines to a significantly low level of -5.0 per cent. The figures for 1960-61 are not yet available, but if we take balance of first seven months (April to October 1960) and add it to the balance of preceding four years, then the net balance is reduced to a very small amount of Rs. 11 lakhs and ratio becomes less than 0.1 per cent. In other words, trade with Eastern Europe taken together, has been balanced during the period under Second Five Year Plan, though balance with individual countries, normally have not been achieved. When we take out Soviet Union with which India had large trade surplus in last two years, there was consistent trade deficit with

East Europe except in 1959-60 when India had a small surplus of Rs. 89 lakhs. Trade surplus with Soviet Union in 1958-59 and 1959-60 enabled India to repay a part of the credit of Rs. 63 crores for Bhilai Steel Plant. Czechoslavakia, Poland, Hungary and Yugoslavia had normally surplus trade balance through these years. In other words, failure to obtain balance has benefitted India by allowing her to import a larger volume of goods then she could pay for either in terms of convertible currency or in terms of goods.

TABLE 4

India's Trade Balance with East-Europe

(in lakhs of Rs.)

	Net Trade balance 1	Volume of trade Exports plus Imports ÷ 2 2	Ratio of 1 to 2 (in percentage) 3
1952/53	— 4	218	— 1·8
1953/54	+ 186	316	+ 60·4
1954/55	— 369	619	— 61·2
1955/56	— 566	812	— 69·7
Annual average of 1952/53-1955/56	—	—	± 48·3
Sum of 1952/53 to 1955/56	— 763	1965	— 38·8
1956/57	— 1128	2653	— 42·5
1957/58	— 1410	3115	— 45·3
1958/59	+ 339	3245	+ 10·4
1959/60	+ 1542	4169	+ 37·0
1960/61 (April to October)	+ 646	2523	+ 25·6
Annual average of 1956/57 to 1959/60	—	—	± 33·8
Sum of 1956/57 to 1959/60	— 657	13182	— 5·0
Sum of 1956/57 to 1960/61	— 11	15705	less than — 1

Gains from Shipping Service

It was indicated earlier that under the agreement between India and Soviet Union, and Poland, partner countries agree to promote mutual shipping by transporting the cargo traded between them in their own ships. On the basis of the joint communique issued by India and Soviet Union on 13th December, 1955, a shipping agreement was signed on 6th April, 1956 between the two Governments. According to the agreement, there will be equal participation of tonnage by two countries. All payments will be made in accordance with the conditions laid down in the Agreement of 1953 (*i.e.*, in convertible rupee account). The cargo will be distributed on parity basis, that is to say, gains from shipping will be equally divided between two countries. To start with both countries have put for sailing six

ships each, amounting to 55150 dwt. in case of India and 55540 dwt. by Soviet Union.

A similar Shipping Agreement was signed in May 1956 with Poland. To begin with each country was supposed to put in three ships. On Indian side Western Shipping Corporation has been nominated as the organisation responsible for maintaining the service. The Corporation however, failed to charter the necessary vessels and service from India could not be started in time. In the meanwhile Poland has already placed five vessels for the service. It was stated by the Ministry of Transport and Communications that since freight rates were very low, chartering of vessels would have become uneconomical.[2] For three years no Indian ship was placed on India-Poland line. A new shipping agreement replacing the earlier one was signed in June 1959. It is now proposed to have 12 sailings each year from each country. India has already put in three ships on this line, one each by Western Shipping Corporation, Indian Steamship Co., and Scindia Steam Navigation Co.

It has been estimated that while India pays about Rs. 150 crores annually by way of freight actual share of Indian ships amounts to less than Rs. 20 crores.[3] The payment of Rs. 130 crores as freight would mean a serious drain on country's foreign exchange resources. Indo-Soviet Shipping service has enabled India to save more than a crore worth of foreign exchange on freight, and encourage Indian shipping industry.

TABLE 5

Freights earned by Indian vessels of the Indo-Soviet Shipping Service

1957	91 lakhs
1958	109 „
1959	139 „

Source : Indo-Soviet shipping service secretariat.

India's freight earnings from this line increased from Rs. 90 lakhs in 1957 to Rs. 139 lakhs in 1959. Statistics for Indo-Polish Line are not yet available. We can expect that within 5 years India would be saving atleast Rs. 7-8 crores by way of foreign exchange from these lines.[4]

[2] Estimates Committee 1958-59, 38th Report on *Western Shipping Corporation* and *Eastern Shipping Corporation*, p. 28.

[3] Estimates Committee, *Ibid.*, p. 1.

[4] The figure is arrived at on the assumption that India's trade with these countries (exports plus imports) would reach Rs. 150-160 crores. Taking freight as ten per cent of trade, freight will amount to Rs. 15-16 crores. Since export earnings are distributed on parity basis, India's share would amount to Rs. 7-8 crores.

Given this very high rate of expansion of trade, our next task is to provide explanations why the rate of expansion is what it is, and whether is it due to bilateral payments agreements. Just because trade was conducted under bilateral arrangements, it cannot be concluded on a *priori* grounds that the entire or even a large part of credit for expansion is due to it. There may be some other forces (*e.g.*, rise in income) working to stimulate trade under bilateral agreement, but which would also have worked had there been no such agreement. Only after taking cognition of the contribution of these factors, that can we make a proper assessment of the role of a bilateral agreement.

Before discussing the significance of each contributory factor, it may be noted that a part of what appears to be a phenomenal rise, may be just a simple statistical illusion. Since the level of trade in the base year was low any further expansion of trade would impart an upward statistical illusion to the entire series. Moreover, the data presented here is confined to relatively a short period of eight years, from 1952-53 to 1959-60 which, if at all, would reinforce the illusion. The change of base year from earlier year to an intermediate year, under these circumstances, would also be of very little help in removing the illusion. It is very difficult, if not impossible, to make allowance for this factor, since we do not know what portion of rise in trade each year can be attributed to it. Against this there is one compensating fact that as trade goes on increasing its importance continuously goes on declining. Exports to these countries, as we have seen, have been rising at a remarkable rate even through later years. It may also be noted that the overall trade of Eastern Europe, has been expanding at a faster rate than world trade during all these years. Between 1950-1959 world exports (excluding Centrally Planned Economics) increased by 78%, whereas exports from Eastern Europe expanded by 180%.[5] The share of underdeveloped countries in exports from these countries increased from 6.4% in 1950 to 8.4% in 1957.[6] In other words, trade of these countries grew at more than twice the rate of growth of world exports during 1950-59 and secondly, their exports to underdeveloped

	1960	1959	
	(million dollars)		
[5] World exports	59000	105100	
Exports from East Europe	4270	11997	(excludes exports from East Germany to West Germany)

Source: For world exports, Monthly Bulletin of Statistics U.N. 1960. For Exports from East Europe, Economic Bulletin for Europe, June 1959, September 1960.

[6] The corresponding figures for share of imports from underdeveloped countries are 6.5 per cent and 9.9 per cent.

countries have risen at a faster rate than their total trade. Statistical series which record such a fabulous rise, therefore, may be something more than a simple illusion. There must be other powerful forces leading to a rapid expansion of trade.

Apart from the statistical bias, the rapid expansion of trade may be attributed to a very high rate of growth of output coupled with relatively a higher income elasticity to import primary commodities. During the years 1949-59 the average annual rate of growth of national income in these countries amounted to 9.1% compared to 4.1% in U.S.A. and ten other industrial countries of Europe.[7] These rates of growth strictly speaking are not comparable because of the conceptual differences involved. There would, however, hardly be any disagreement if we were to conclude that these countries are growing at a faster rate than industrial countries of free world.[8]

If it can be shown that the income elasticity to import in East European countries is higher than in other countries, we can derive the conclusion that import absorption capacity would rise at a faster rate in the former countries. To show that import capacity would rise faster in Eastern Europe it is not necessary that their income elasticity to import should also be higher than in other countries. An equal value of elasticity to import would imply that import demand would rise more rapidly in former countries, than in latter. But if the elasticity to import is higher in East Europe, it would follow that import demand would rise considerably faster than in other countries. No statistical estimates for this elasticity unfortunately, are available for these countries. At least none is known to the present author. In absence of any statistically derived estimates, it is alternatively decided here to put forward a hypothesis regarding the said elasticity and to present sufficient arguments to justify it.

The adoption of such a procedure raises one fundamental issue. Has the concept of income elasticity to import any relevance to these countries? Since individuals are not free to express their choice effectively and production decisions are made by the economic authority, it is not likely, indeed, highly unlikely that the decisions made by the Economic Authority would be in consonance with the decisions of individuals. The decision of the

[7] U.N. *World Economic Survey*, 1959, p. 19, p. 112. The average for East Europe excludes Yugoslavia. The average for free world industrial countries include U.S.A., U.K., Norway, Netherlands, Japan, France, West Germany, Denmark, Canada and Belgium.

[8] According to a study by The Council for Economic Industry Research Inc. titled "Some Comparisons of the U.S. and Communist Bloc Assistance Programs," the rate of growth of Soviet Union would be over 6% compared to 4% of U.S.

Authority may tend to be arbitrary, and the concept would be left without any meaning. Such a view-point may be said to be untenable so far as the period under study for these countries is concerned. It is natural that there would always be some divergence between the choice of Authority for individuals, and individuals' choice for themselves, even if the Economic Authority were gifted with omniscience. This would happen for the simple reason that the period over which the authority plans to maximise collective welfare would generally be longer than the period over which an individual would desire to maximise his welfare. This, however, does not undermine the concept of income elasticity to import. Instead of taking import as a function only on income of all individuals now we add the Economic Authority as one more variable.

The pattern of growth that would follow from individualistic (or Paretian) and from ' paternalistic ' type of choice would normally be different because of the prevalence of divergence between the time horizon of individuals and of the Economic Authority.[9] The former may lead to what has come to be known as balanced growth, while the latter to unbalanced growth. The pattern of growth that a country chooses will have a definite impact upon the structure of imports, and therefore, upon the value of elasticity coefficient. But the concept of income as such is neutral and loses no significance when State enters the field of trade.

This is subject, however, to one big assumption, namely that the development policy the Economic Authority pursues will endeavour to reap maximum benefits from international trade. Trade relations between free world countries and Eastern Europe were hampered till 1952 because of the United Nations' embargo on exports of strategic materials from free world countries to these countries. There also prevailed a definite trend towards autarchy under the Stalin regime. Stalin's successors after 1953, however, appear to have decided to derive benefits of international specialisation and relieve strains on the economy arising from shortage of essential imports.[10] This can be observed by the rapidity and consistency with which their trade has expanded through the succeeding years.

Can we say anything about their income elasticity to import primary commodities ? The experience of industrial countries

[9] The term is borrowed from J. de V. Graaff, *Theoretical Welfare Economics*, Cambridge, 1957. " The first concept of group welfare, I shall call the paternalistic as it is completely divorced from the preference of the individual members of the group," p. 7.

[10] " Scarcity of imports has been endemic in all Eastern European countries throughout the post-war period." *Foreign Trade and Economic Development in Eastern Europe and The Soviet Union*—Economic Bulletin for Europe, June 1959, p. 39.

suggest that as the income of a country increases, the proportion of income spent on primary commodities would go on diminishing. Higher the level of income lower would be the income elasticity of demand for primary commodities. So far as food articles are concerned, the hypothesis is derived by calling in the Engel's law. Professor Schultz's findings about income elasticity of demand for food consumption for Latin American countries support the above hypothesis. He divides the countries into three groups according to their levels of income, and finds that for the very poor countries the income elasticity was 1.0, for not nearly so poor it was 0.7 and for comparatively well-to-do countries it was 0.5. For United States it was .25.[11]

In case of raw materials, Professor Schultz makes a survey of production and consumption of raw materials in U.S. The share of production of raw materials in Gross National Product declined from 23.9% during 1904-13 to 12.4% during 1944-50 while the share of consumption, over the same period, declined from 22.6% to 12.5%.[12] The very slow rise in consumption of primary products, Professor Schultz feels can be explained " mainly by the income elasticity of demand." " On the supply side, I infer that enough additional output has been forthcoming to satisfy the increases in demand at approximately the same or even at a somewhat lower, relative prices, except in the case of forest products."[13]

From the aforesaid facts we can derive a hypothesis that higher the level of income, lower would be the income elasticity of demand for primary commodities. According to this hypothesis, it can be expected that the income elasticity of demand in middle income country would be less than in a poor income country, while in rich income country it would be less than in other two groups. So far as level of income is concerned, in the array of all countries of world according to their *per capita* income, East European Countries would fall in middle income group. A study of *per capita* income of 64 countries for the year 1955 by Paul Studenski[14] indicates that the average *per capita* income of these countries was around $265; the U.S. and other eight high income countries had an average of $983, while there is still another upper middle *per capita* income group of nine countries with an average of $444, while two other groups consisting of 34 countries had average *per capita* income ($225 and $94) below the average of East Europe. On the

[11] T. W. Schultz, Economic Prospects of Primary Products, in Howard S. Ellis (edt.), *Economic Development for Latin America*, London (1961), Table 2, p. 316, p. 315.

[12] T. W. Schultz, *ibid.*, Appendix Table 4, p. 326.

[13] T. W. Schultz, *ibid.*, p. 312.

[14] Paul Studenski, *The Income of Nations*, New York 1958, Table 16.3, pp. 229, 30 The average for Eastern Europe includes Albania.

basis of these statistics we may draw a conclusion that the income-elasticity to consume (not to import) primary commodities would be higher in Eastern Europe than in high income industrial countries, since the Eastern Europe consists of middle income groups countries. At best this is a hypothesis for demand for primary commodities and unless we learn something about the domestic supply situation we can say little about demand for imports from other countries. But if we accept the hypothesis it would follow that demand for primary commodities should rise faster in East European countries than in other high income group countries.

The domestic supply of primary commodities would depend upon the pattern of growth followed by a country. The pattern of unbalanced growth which gives a high priority to basic and intermediate industries during earlier years of growth has been responsible for a very high rate of growth of these countries. But the continuous emphasis on manufacturing sector, particularly on production of capital goods has imparted a comparative advantage to these countries in these goods. The production of primary commodities, on the other hand, was neglected with the consequence that during the years under study, they faced a persistent shortage of these commodities.

TABLE 6

Indices of Gross Output of Industry, Agriculture and Mining

	(1950=100)	
Eastern Europe	1937	1957
Industry	68	224
Agriculture	113	129
Mining	70	147
Soviet Union		
Industry	40	225
Agriculture	90	138
Mining	58	195

Source : U. N., *World Economic Survey,1958*, Table 34, P. 145.

We can observe from Table 6 that output in industrial sector rose at a faster rate than in agriculture and in mining, and that the agricultural production lagged behind both. Throughout the post-war period they have been suffering from shortages of fuel and raw materials and the foreign trade difficulties intensified, or atleast prolonged "the various shortages hampering balanced growth of output and the improvement of living standards."[15] A study of prices of in-

[15] Economic Bulletin for Europe. June, 1959, p. 139.

dustrial products in Soviet Union by Bergson, Bernaut and Turgeon for an earlier period (1928-50), bring out that nearer the product to its primary stage, larger was the rise in price.[16] The price index of basic industrial products in 1950 (1928=100) was 569. The commodities whose prices rose above this included non-ferrous alloys, coke, coal, time, turpentine, bricks, blast furnace products iron ore, peat, wood and lumber products etc. Prices of non-ferrous alloys, coke and coal rose the highest (the indices were 1381, 1186 and 1094 respectively). A similar conclusion has been derived by a United Nations study for the period 1948-55. The price reform of 1955 in Soviet Union fixed average prices for the next Five Year Plan at a level which was 8 to 10% below the 1948 price. But this reduction was chiefly an outcome of reduction in cost of machine building industries while in other branches the prices were still 20% above those of 1948. "Prices of primary commodities such as coal, ferrous metals and several non-ferrous metals were fifty to 100% and more above the 1948 level. These differences in price changes indicate that between 1940 and 1955 the cost of manufactured products declined substantially in relation to that of primary commodities."[17]

So far as the structure of their foreign trade is concerned we may note that the share of primary commodities in total exports has shown a decline except in case of Soviet Russia where it shows an increase since 1955. Correspondingly, share of primary commodities in imports has increased again with the exception of Soviet Union where it shows a decline. The change in the trade pattern has been "the result of a steeper rise in consumption than in domestic production of these commodities."[18]

We can get some further idea of cost condition in East Europe by looking at the following figures of commodities in which India has a particular interest as an exporting country.

TABLE 7

Indices of unit value of Exports of Soviet Union to East Europe

	(1955=100) World Market Prices		Prices of U.S.S.R. exports to E. Europe.	
	1956	1957	1956	1957
Iron Ore	108	120	102	125
Manganese Ore	—	—	99	159
Tobacco	100	107	84	110
Vegetable Oil	105	106	112	111

Derived from Table 36, World Economic Survey 1958. P. 143.

[16] Abraham Bergson, Roman Bernaut, and Lynn Turgeon, *Prices of Basic Industrial Products in the U.S.S.R. 1928-1950*, Journal of Political Economy 1956, Table 4, p. 323.

[17] U.N., *World Economic Survey 1958*, Chapter 4, p. 140.

[18] U.N., *World Economic Survey 1958*, page 151.

In three commodities for which date are available, indices of unit value of exports of Soviet Union were less than world price in 1956 but were more in 1957. This does not necessarily mean that actual prices charged by Soviet Union were lower than world prices in 1956. It would depend upon prices that prevailed in 1955. If Russian prices were already above world prices in 1955, they may still be higher in 1956 though by a smaller margin now. Except in case of manganese ore which Russia exports to world on a large-scale (it supplied 18% of world exports in 1955 and 1956). We can expect that they were higher in Soviet Union. Actually a study of prices of a large sized sample of 49 commodities, indicates that the differences between the prices charged by Soviet Union to the Eastern Europe and to the Western Europe were the highest in 1955 during four years beginning with 1955.[19] According to a member of an Indian Trade Delegation the price of tea was as high as Rs. 35 per lb. in Soviet Union 1958.[20] Prices of other commodities such as spices, lac or mica in which India has an absolute advantage would be naturally higher in these countries.

Role of Bilateralism

In enumerating various factors that are responsible for stimulating India's trade relations with these countries, we have side-parked our main problem. What role can be assigned to bilateral agreements in the web of explanatory variables ? The factors we mentioned heretofore, could exist and influence trade independently of bilateral agreement and therefore, their contribution should be judged separately. Trade normally seems to have taken place at world prices. At least it is true of exports from India. The State Trading Corporation (STC) which was established in 1956 and through which trade with Communist countries is intended to be channelised, was responsible for only twenty per cent of India's trade with these countries. The STC might have charged lower than world prices, particularly in 1958, when exports in free markets declined substantially but it would amount, as we have seen, only for a small part of trade. East European countries might have charged less than world prices, because, being state directed economics social cost and benefit play a major role in fixing the price. Alternatively, they could also charge higher price than the world price by employing their superior bargaining strength. It is found that Soviet machinery for the Steelplant, Soviet Oil and Yugoslavian ships have been im-

[19] Horst Mendershausen, *The Terms of Soviet Satellite Trade* (mimeographed), p. 1873, The Rand Corporation, p. 11.

[20] Capital 8-1-1959.

ported in India cheaper than from other sources.[21] But direct differences in price are of much less consequence in trade with these countries. The major source of discrimination arises from payments terms under the bilateral agreement. Since India has to pay in terms of non-convertible rupee (after 1958), trade with these countries involves no payments of convertible currency. Moreover, East European countries, with their comparative advantage in production of capital goods are in a position to supply goods necessary for India's industrial development. East European countries are willing to trade under bilateralism because it provides them stability of trade, *i.e.*, certainty of the source of supply and of market, a necessary condition for planned economy.

India developed in fact, an import surplus consistently till 1958-1959. Moreover, since all payments are to be made in non-convertible rupee, more imports would imply a corresponding act of more exports. All Eastern European Countries, in this regard possess characteristics of a good international trader. With their very high rate of expansion, they are unlikely to become persistent creditors.[22] Had there been no agreement, India would not have imported such large volume from these countries. Similarly, if India were not to import from these countries, her exports to these countries would also have been less. India, as well as Eastern Europe, therefore, may be said to have gained by the emergence of the agreement.

A more important question remains yet to be answered. Is it not possible that expansion of trade with East Europe was at the cost of reduction in trade with the rest of the world ? If supply were fixed, any expansion of exports to one country would result in reduction in exports to some other country. So far as East European countries are concerned, the very assumption of fixed supply may be challenged. In an economy growing at such a fast rate export supply as well as volume of output expand at such a rapid rate that

[21] For financial as well as technical comparison of Soviet assistance for Bhilai Steel Plant with German-assisted Rourkela and British-assisted Durgapur Steel plants, see Estimates Committee report 1958-1959 on *Rourkela, Bhilai, Durgapur.*

Imports of Soviet Oil have been started since August 1960, as a challange to refusal of private oil companies to reduce the price of oil. Actually, Soviet Oil is imported cheaper. Immediately after the arrival of Soviet Oil, prices of Kerosene declined by 75 nP. per gallon. See *Financial Express 26-4-1961.*

In 1956, when owing to the Suez crisis, price of ships had risen very high the price quoted by Yugoslavian Yards was the lowest. Secondly, they were prepared to accept 80% of the price in Indian currency. Ultimately, the offer was not sympathetically considered. See Estimates Committee (1958-1959) *38th Report on Western Shipping Corporation and Eastern Shipping Corporation.*

[22] U.N., Economic Bulletin for Europe, June 1959.

any analysis based on the assumption of fixed supply gets soon outmoden. Instead an assumption of easy supply conditions may be a more realistic one for these countries.

A rough idea of India's export capacity can be had by looking at following indices of production, export volume and unit value of India's principal export commodities. (See table III). Out of seven commodities for which we have calculated production and export volume indices, we find that in five cases exports have increased at a slower rate than production. Only in the case of iron ore and tea volume of exports has increased faster than production.

We do not have any independent series of domestic consumption for these commodities. All that we can do is to deduct exports from total production and neglecting variation in stocks, derive the residual as series of domestic consumption. We will assume here that consumption habits of individuals and structure of industries have remained same as they were in 1952-53. If we further assume that the ratio of exports to production in 1952-53 was normal we can say that a faster rise in production compared to exports would imply creation of surplus export capacity in the country. With the aid of evidence that we have at present it is difficult to establish such a simple hypothesis. The domestic consumption might increase faster, and instead of surplus it might give rise to scarcity. We will have to rely, in this case, on some other sources to support the hypothesis. A faster rise of volume index compared to unit value index may be taken as another indicator. In case of tea unit value index rose faster than volume index. The index, however, rose upto 1954-55 and then it declined in 1955-56 and after that it has been stabilised. The rise in earlier period has been due to liberalisation of tea consumption in the U.K. There is no evidence to believe that after 1955-56, the year since which East Europe has been showing interest in purchasing tea, demand was in excess of supply. Probably, emergence of these countries as buyers helped India to stabilise her terms of trade which perhaps would have worsened otherwise. In case of iron ore, India already had surplus production, and if at all, it was the entry of Japan that helped to stabilise India's price. In case of mica domestic consumption seems to be rising fast, and trade diversion might have taken place in this commodity. In other commodities, India has gained by obtaining more favourable prices than she could have had otherwise.[33] It may incidentally be observed that during these years (1952-53=100) India's export earnings were stationary, export volume showed small increase while

[33] The rise in price of Lac in 1954-55 was due to very bad crop in 53-54. The price after 1955-56 has been on a continuous decline. Production and exports are also on decline. India, in fact, faces the problem of surplus production. See National Council of Applied Economic Research, *Exports Markets for Indian Lac* (1956).

export unit value index was below 100 for five years and equal to 100 for the remaining year. In other words, trade with East European countries helped India to stabilise her exports in her otherwise sagging third markets and benefitted her, not only by the amount of additional trade with them, but also on each unit of trade with the rest of the countries in the form of higher price. That is to say, the gain in the free market due to bilateral agreements can be approximated by total exports to these countries multiplied by the difference in price between what actually it was and what it would have been in absence of the bilateral agreement.

On imports side we have seen that India could acquire essential imports from these countries. The choice for India is not between purchasing capital goods from West Europe or from East Europe, but between purchasing from East Europe and producing them at home or lower the rate of growth of production. As between India and East Europe, latter have developed a comparative advantage in production of capital goods. Secondly, payments are to be made in non-convertible rupee. This would enable India to conserve convertible currency for imports from other superior sources.

But there is one danger. Since the capacity to absorb imports will rise faster in East Europe than in the rest of the world, the former will make larger claims on India's exports in future. If India's export capacity fails to rise at a sufficiently fast rate, she will have to divert exports from other sources to East Europe, which in other words, will amount to loss of convertible exchange. This, however, is an erroneous view-point. It is a challenge to Indian economy, and a gain too. From our analysis of import absorption capacity, we can say that, there is high degree of complementarity between India and East European countries and therefore, considerable scope exists for expansion of trade. Whether these potentialities will be exploited or lost sight of, would depend upon non-economic motivations of the Economic Authority.

We have so far avoided discussion of non-economic factors as trade-stimulating factors. The ultimate decision to trade will depend upon this factor in economics controlled by the central authority. Our discussion, shows that economic factors are sufficient to justify such a rapid rise and to promise continuation of such rise in future. But if the political authority decides to override decisions dictated by the economic factors, trade may not expand, or may even contract, and opportunity of increasing welfare from trade will be lost. We will, however, abstain from discussion of non-economic factors.

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TABLE I

INDIA'S TRADE WITH EAST EUROPE : 1952-53—1959-60

Exports

	USSR	Poland	GDR	Hungary	Czechoslovakia	Yugoslavia	Bulgania	Roumania	Total* Eastern Europe	Total (exct. USSR) Estern Europe	Rest of the world	Total India
	(in lakhs of Rs.)										(in crores of Rs.)	
	1	2	3	4	5	6	7	8	9	10	11	12
1952/53	85	4	2	4	107	11	—	3	216(0·4%)	131	599·7	601·9
53/54	115	15	1	2	276	1	—	—	410(0·8%)	288	535·7	589·7
54/55	212	46	4	2	158	2	1	4	429(0·7%)	217	592·3	596·6
55/56	326	33	2	8	133	24	2	1	529(0·8%)	203	634.9	640·2
56/57	1532	123	145	11	309	26	5	22	2089(3·3%)	557	614·3	635·2
57/58	1662	92	146	37	337	78	2	56	2410(4·1%)	748	570·0	594·1
58/59	2589	88	117	76	397	91	14	43	3415(5·9%)	826	541·7	575·9
59/60	3058	402	298	71	510	259	19	238	4940(7·9%)	882	573·9	623·3

Imports

	1	2	3	4	5	6	7	8	9*	10	11	12
											(in crores of Rs.)	
1952/53	24	26	10	16	135	9	—	—	220(0·3%)	196	630·8	633·0
53/54	60	16	8	10	114	7	—	—	215(0·4%)	155	589·6	591·8
54/55	181	424	23	10	125	16	1	28	808(1·2%)	627	675·7	683·8
55/56	821	43	37	41	289	29	3	32	1095(1·4%)	474	750·4	761·4
56/57	1691	444	48	66	727	200	22	19	3217(2·9%)	1526	1067·3	1099·5
57/58	2447	299	64	81	548	306	12	63	3820(3·1%)	1373	1195·4	1238·5
58/59	1721	280	198	128	578	160	8	53	3076(3·0%)	1355	998·8	1029·6
59/60	1605	412	258	195	457	306	25	140	3398(3·6%)	1393	889·7	923·6

* Figures in the brackets indicate percentage share in India's total exports and imports respectively.

Source : (1) Accounts Relating to the Foreign Trade and Navigation of India.
(2) Monthly statistics of the Foreign Trade of India.

TABLE II

India's Exports to East Europe

(in 000 Rs.)

	Tea	Spices	manganese ore	Raw cotton and cotton waste	mica	lac	hides and skins	leather	Vege-tables oils	tobacco unmanu-factured	iron ore	Jute manu-factures	Total
1954/55	—	6088	—	—	2011	3239	15422	227	—	—	11520	—	38507
1955/56	141	16560	—	14	3286	4071	15904	59	92	47	8950	—	50024
1956/57	6236	8863	—	—	5801	9507	22819	—	2479	2145	32863	245020	165397
1957/58	47745	15054	6055	2255	5295	2799	24518	162	16141	3355	33365	17798	174542
1958/59	99017	10705	5892	4466	12255	5061	44870	540	13828	5858	26888	24600	253999
1959/60	90978	27907	5084	2893	18107	2824	75226	3925	19382	7217	33365	35840	328745
	% in India's total exports of these commodities												
1954/55	—	5·7	—	—	2·9	4·2	21·4	—	—	—	34·9	—	89·8*
1955/56	less than ·1	15·5	—	—	3·9	4·7	24·1	—	—	—	15·1	—	94·5
1956/57	·4	9·7	—	—	5·8	10·0	38·0	—	15·9	1·7	35·3	2·0	79·2
1957/58	4·2	18·8	2·0	1·5	5·5	4·1	36·1	·00	15·2	2·3	29·6	1·5	72·4
1958/59	7·6	13·4	4·3	2·0	11·8	8·9	55·1	0·3	21·7	4·0	27·6	2·5	74·4
1959/60	7·0	19·3	5·0	2·0	16·6	4·5	67·0	1·3	13·0	5·3	28·2	2·7	65·3

* Percentage in this column refers to share of exports of these commodities in total exports to East European countries.

Source : Same as in Table I.

TABLE III

Indices for India's Export Commodities
(1952-53 = 100)

	Tea				Iron Ore				Spices				Lac			
	Unit value	Volume	Production	Volume ÷ Production	Unit value	Volume	Production	Volume ÷ Production	Unit value	Volume	Production	Volume ÷ value	Unit volume	Volume	Production	Volume ÷ Production
1953/54	115	110	87·2	122·7	101	156	98·2	158·9	85	94	104·3	90·1	110	80	63·3	126·4
1954/55	170	107	95·8	98·1	90	125	109·7	118·9	85	99	113·0	87·6	170	79	100·8	78·4
1955/56	143	94	93·1	133·2	101	168	119·1	135·8	50	100	121·7	82·2	174	85	112·7	75·4
1956/57	144	124	101·6	97·4	114	221	124·8	177·1	45	96	117·4	81·8	148	84	117·9	71·2
1957/58	142	99	101·6	11·02	115	279	129·5	215·4	34	112	117·4	95·4	114	71	99·0	71·7
1958/59	143	112	—	—	108	242	163·7	157·4	38	100	113·0	88·5	104	78	87·6	89·0
1959/60	—	—	—	—	—	—	198·9	178·5	—	—	108·7					

	Tobacco				Manganese ore				Mica							
	Unit value	Volume	Production	Volume ÷ Production	Unit value	Volume	Production	Volume ÷ Production	Unit value	volume	Production	Volume ÷ Production	India Unit value	India Volume		
1953/54	100	78	111·0	70·3	102	109	132·2	82·4					94	99		
1954/55	57	83	104·1	79·7	86	69	98	70·2					100	102		
1955/56	77	93	123·7	80·0	77	64	110·0	58·2					93	115		
										1955 = 100						
1956/57	84	114	124·5	91·6	117	63	116·6	54·0	110	98	120·8	81·0	85	110		
1957-58	98	114	98·4	115·9	123	111	115·0	96·5	112	101	130·9	77·5	94	117		
1958/59	89	127	108·2	117·4	100	62	87·3	71·0	139	89	135·6	65·1	93	108		
1959/60			116·7				81·2	81·3	115	106	121·6	87·1				

Source :—Unit value indices. Accounts Relating to the Foreign trade and navigation of India supplement to Monthly statistics of the Foreign trade of India. In case of mica, manganese ore and iron ore, derived by deflating total value index by volume index. Volume indices. Same as above : Derived series for tea and spices (after 1956). Production indices. Based on statistics from Monthly Abstract of statistics. Index for the production of Lac includes imports also.

THE ECONOMIC DEVELOPMENT OF LIBYA*

I

THE present Report follows the familiar pattern of previous I.B.R.D. Survey Mission teams to the underdeveloped countries. While such Reports are not intended as a detailed blue print for development they are invaluable to policy-makers as essential background material for formulating more definitive proposals.

Professional economists,[1] who have in the recent past written on problems of Libyan economic development, have been prone to excessive pessimism about the economic position and prospects of the United Kingdom of Libya ever since its emergence as an independent sovereign state on Decembear 24, 1951.

On the other hand, historical evidence[2] through the ages supports the view that Libya has been a viable economy. In ancient times it was known as the granary of Europe. But the ravages wrought by "The King's Enemies and Act of God" alike had sapped the founda-

*Shri Chandavarkar, former Economic Adviser to the National Bank of Libya (1959) and Governor for Libya on the International Monetary Fund (1959), reviews in this article "The Economic Development of Libya," (Report of a Mission organised by the International Bank for Reconstruction and Development at the request of the Government of Libya, Johns Hopkins Press, Baltimore, U.S.A., 1960, pp. 524, $7.50). He was in Libya during the visit of the I.B.R.D. Mission. The views expressed here are personal.

[1] "The Libyan economy offers discouragingly little with which to work..... if the prospects for rapid expansion of agriculture are not bright, the prospects for industrialisation are still limited. The basis for industrialisation is almost completely lacking.... Libyan capacity to finance its own economic development is extremely limited... Libya combines within the borders of one country virtually all the obstacles to development that can be found anywhere: geographic economic, political, sociological, technological. If Libya can be brought to a stage of sustained growth, there is hope for every country in the world." Benjamin Higgins, "Economic development" Constable & Co. Ltd., London, 1959, pp. 27-37. Professor Higgins served as a U.N. expert in Libya soon after independence and his analysis and recommendations were issued in a Report on 'The Economic and Social Development of Libya,' New York, 1953.

[2] Legend has it that the Delphic Oracle told Battus who became the first King of Cyrene in ancient Libya "Battus, thou comest for a voice, but the Lord Apollo Sendeth thee to found a city in Libya, which giveth good pasture to sheep." (Richard Goodchild, "Cyrene and Apollonia," Antiquities Department of Cyrenaica, 1959, p. 7). In the late eighteenth century, during the Turkish regime, an English lady of rare discernment, who resided in Tripoli for a decade, observed that 'the barley when sown here yields twice as much as it does in Europe." (Miss Tully, "Ten Years' Residence at the Court of Tripoli," New Limited Edition, Arthur Barker, 1957, Ed. Seton Dearden, p. 81).

tions of the Libyan economy by the time Libya entered the comity of independent nations, which accounts for the substantial foreign financial and technical assistance granted to it ever since. The more articulate Libyans have always keenly felt the inherent disadvantages or heavy dependence on foreign aid and have conscientiously striven to prove that the country's economy is basically viable even without the supervention of the oil discoveries. This has been since amply substantiated by the findings and recommendations of the present I.B.R.D. Economic Survey Mission, whose Report, among other things, goes to show that Libya can build a viable economy even on the foundations of agriculture, animal husbandry, fisheries and tourism. This needed to be said if only to dispel some of the needless gloom cast by the Cassandra-like pronouncements of earlier economic surveys of the country.

II

The present Report is a substantial and realistic assessment of the Libyan economy, which should help the country to get started on the business of development proper now that the 'care-and-maintenance' phase of the economy is well past. Fortunately, the problems of Libyan development are much less intractable than imagined by experts and layman alike. The country has many substantial, evn if intangible, assets. It is no doubt like many other underdeveloped countries a 'dual economy' with a traditional and a modern sector but unlike quite a few of them Libya is not bedevilled by the ills of a plural society despite the economically influential Italian minority in the Province of Tripolitania, which is also a tribute to the political maturity of the Libyans. Standards of Government and civic administration are comparatively high. There is an orderliness and stability in public life which augurs well for developmental activities. The small but growing Libyan intelligentsia is alert, enthusiastic and dedicated. Even the common people display an amazingly active interest in economic matters. Seldom could the visit of an I.B.R.D. Survey Mission anywhere have evoked so much public curiosity and interest as in Libya. There is no immediate demographic problem in a country with an area well over half the size of India but with a total population of only about 1.2 million. Even though this partly reflects the exceptionally high infant mortality rate, the fact remains that on the basis of the existing population the land area provides nearly 1½ hectares of cultivable land per inhabitant, which is higher than in most Middle Eastern countries.

III

It is interesting to note that of the total gross domestic product at factor cost (in 1958) estimated at £L 52.2 million, nearly 50 per cent was derived from administration, services, trade, communica-

tions etc. whereas agriculture, forestry and fishing accounted for 26 per cent, petroleum prospecting and quarrying for 6.9 per cent and manufacturing and construction for nearly 14 per cent. This provides further corroboration of the Bauer-Yamey[3] hypothesis of the importance of the tertiary sector in the occupational pattern of underdeveloped economies.

The balance of payments position highlights the present heavy dependence of the economy on foreign aid, directly and indirectly. The value of imports is about half of that of the value of Libya's own production, a proportion equalled by few other countries in the world. Less than one-fifth of the foreign exchange required to pay for these imports is derived from Libya's merchandise exports which, however, are spread over a fairly diversified range of commodities such as esparto grass, sponges, olive oil, livestock, wool, groundnuts, fruit etc. and consequently there is no problem of built-in instability and export -induced fluctuations as in the case of mono-cultural export economies. The balance of foreign exchange proceeds is accounted for by invisible exports, foreign aid and the expenditure in Libya by oil companies and foreign governments. This has created a situation which might not unjustifiably be described as a plethora of foreign exchange. Consequently, foreign exchange has not been a bottleneck in Libyan development in recent years. The Mission recommends further liberalisation of import restrictions to help counter inflationary pressures. But nearly 70 per cent of Libyan imports are already on the open general licence and further relaxation would mean removal of import controls on items which directly compete with domestic agriculture and industries. This would mean controlling inflation by construction of internal economic development.

A significant lesson of economic development in Libya is the precise scope and limitations of technical assistance. In fact Libya as one of the largest recipients of foreign technical assistance from the U.N. and also foreign governments, offers unique opportunities for the study of the economic rationale and efficacy of such aid. But it is unfortunate that the Mission did not attempt a systematic assessment of technical assistance programmes[4] as a whole in place of the rather fragmentary treatment of the problem in different chapters which does not face up squarely to the vital question. Is Libya getting full value for technical assistance? For one thing it is difficult to justify appointments of expatriates in jobs which could

[3] P. T. Bauer and B. S. Yamey, 'Economic Progress and Occupational Distribution.' The Economic Journal, December, 1951.

[4] On this one may refer to the penetrating analysis in "Foreign Technical Assistance: Sense and Nonsense" by J. Amuzegar (Social Research, Autum, 1959). Libya could be an excellent case study for such an analysis.

equally well be done by Libyans themselves. Many of the expatriates are content with doing a specific assignment without troubling to train up suitable Libyan successors, which should really be regarded as the more important part of their duties. There would seem to be some fuzziness on this point at policy-making levels of the organisations concerned. The foreign expert while on his job has to show a positive and constructive sympathy for the local people and not be content with the role of a passive 'development diplomat.' The timely delegation of responsibility to Libyan under-studies is equally vital. Nothing is more calculated to yield rapid results than instilling the necessary self-confidence among Libyan trainees. The present writer can testify to the utility of this approach from his personal experience in the Research Department of the National Bank of Libya.

One of the highlights of the Report is the assessment of the "Impact of Oil Discoveries". Libya is now on the threshold of commercial exploitation of its oil resources. It is of course well-known that petroleum being a highly capital-intensive industry its employment potential is limited. On the other hand, while the economic viability of Libya does not depend on oil, its proper exploitation might make just the difference between viability and affluence. Thoughtful Libyans, notably the first Governor of the National Bank of Libya, long before the onset of the present oil boom, had urged upon the Government and people not to regard oil as a cornucopia of economic prosperity. The promulgation of the Law whereby 70 per cent of the oil revenues are earmarked for allocation by the Development Council is a pointer that Libya is determined to avoid the experience of certain other underdeveloped economies who have frittered away their precious oil revenues in meretricious consumption, both public and private.

IV

The Mission's Report does not give its due place to the monetary and banking problems of Libya and there is a curious ambivalence in its approach to monetary reforms in contrast to the positive character of its analysis and recommendations in the rest of the Report. There is no chapter which deals specifically with the monetary system, though there is a descriptive annexe on 'Money and Banking,' and even in the brief sections which refer to monetary problems it does not come to grips with the basic issue whether the present automatic cent per cent reserve currency system in Libya is compatible with a discretionary monetary policy. The Mission's Report merely says that while the 'argument that 100 per cent currency backing prevents the National Bank from playing an active role in monetary management is theoretically sound, *it is rather academic* in present circumstances.' The fact remains that

money has to be managed on a discretionary basis irrespective of the stage or degree of economic development of a country. Certainly the Annual Reports of the National Bank of Libya with their constant emphasis on the need for currency reform, do not show that there is anything academic (sic) about an economic analysis which points out the inadequacies of an outmoded system. These and other aspects of the monetary and banking system in Libya[5] were exhaustively analysed by the present writer both in a detailed memorandum submitted to the Mission and in the course of oral evidence. There are also some internal inconsistencies in the Mission's recommendations on monetary matters. It wants "a limited issue of short-term and medium-term Libyan Government securities," but how is this to be reconciled with a cent per cent currency reserve consisting wholly of foreign assets since Government borrowing would not be feasible in the absence of a discretionary monetary system. Surely, unless the central bank in Libya is authorised to hold and operate in Libyan Government securities both as currency cover and as portfolio investments, it will not be able to discharge its functions of issue and management of the government debt. And nor can a central bank devoid of the prerogative of money creation function as an autonomous lender of last resort. All this points to the basic incompatibility of discretionary central banking with a cent per cent currency reserve system. The Report also slurs over some other problems such as the combination of central and commercial banking, the case for instituting a system of inspection, supervision and regulation of commercial banks, the relative merits of different instruments of central banking control such as special deposits, variable reserve ratios in Libyan conditions, etc.

On the whole the Report's analysis and recommendations which cover all relevant aspects of economic development, including education and public health, are of an unexceptionable character, though they would still leave room for differences in regard to approach, interpretation and implementation. It is difficult to think of economic diagnosis and prescription in terms of sharp contrasting colours. The task before Libya's policy-makers is, however, clear. The Fourth Annual Report of the National Bank of Libya rightly says, "the real challenge now facing us is whether we can build the necessary administrative and institutional framework which would facilitate, with maximum speed and efficiency, the implementation of all appropriate recommendations made by the Mission." Though the findings of an Economic Survey Mission have no necessary bearing on the lending criteria of the World Bank, it may be still pertinent to raise the question whether the 'specific project' approach of the

[5] For a brief description and economic assessment of the monetary system in Libya, see the present writer's article on 'Central Banking in Libya,' 'The Bankers' Magazine,' (London), June 1960.

Bank to developmental finance would meet the requirements of countries like Libya whose need for capital is not so much for any specific scheme(s) but in a multitude of small channels, both economic and social.

To the student of development economics reports such as the present one inevitably give rise to musings on the state of the subject. They are a reminder that while it is perhaps easy enough to specify the necessary conditions of growth and development it is so much more difficult to categorise the sufficient conditions. The uniqueness of the developmental process is a formidable intellectual challenge to economists who will have to come to terms not only with economic historians but also with sociologists and social anthropologists. Would future I.B.R.D. Survey Missions care to include social anthropologists? The implementation of the recommendations of the present Report will necessarily impinge on social issues like the sedenterisation of nomads, the place of women in the work force, the influence of tribal law and custom on land utilisation, etc. The main springs of development have to be ultimately sought in terms of determinants which cannot be subsumed even in the most complex exogenous models. Of these, Faith and Elan are perhaps the most vital. Some such hypothesis underlies even received doctrine whether it is the "animal spirits" in the Keynesian system or Schumpeter's heroic innovating entrepreneur. But a society to be viable as well as dynamic has to have a judicious amalgam of the 'heroic' and the 'prudential' elements, to use Boulding's elegant dichotomy of the ethical systems which have moved men to action. As he says, "The heroes break through the crust of the established order to set great dynamic processes in motion—these are the prophets, the saints, the poets, the conquerors, the revolutionaries. Then the prudent come along behind them and fit the pieces together into a new establishment; these are the priests, and the popes, the professors, the politicians and the businessmen. Without the heroes society soon settles down into a dull and self-perpetuating equilibrium; without the prudent society flies apart, disintegrates into chaos." But Libya, like other emergent economies, needs today, above all, just that extra bit of Faith, perhaps a little more of the heroic element.

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TWO NEW GROWTH MODELS*

THE pure theory of economic growth continues to occupy the attention of economists. This may be true because of the literally infinite variety of growth models that are conceivable, and infinite variety would add spice to anything. It may also be true because it is much easier to employ assumptions that are "convenient" than to work with assumptions that are sufficiently realistic that it may be claimed that reality is being explained or that a policy tool is being forged. I have no doubt that the marginal productivity of new growth models—measured by the extent to which they contribute to the formulation of growth-inducing policies or explain reality—approaches zero. At the same time to study such models imposes a certain discipline on the reader that is rewarding in itself. And their study contributes to an individual's ability to analyze a given economic situation or problem in a more revealing manner than he would be able to do in the absence of such study.

The two books to be discussed are both essays in "pure" theory. The authors are thus concerned solely with the tracing out of implications of a set of assumptions chosen for their honoured place in the history of economics or for their convenience. Professor Meade asserts that his exercise, based on neo-classical assumptions, has a real usefulness because all economists are so thoroughly familiar with these assumptions and because he believes that there is merit in continuity of tradition and method in the social studies. He does not say why he believes this to be the case, but proceeds boldly to state his assumptions and to explore their implications. Mr. Bensusan-Butt, though pursuing the same method, is much worried about the relationship between his model and reality. He frequently interrupts his main argument to appease the "tender minded" economist who might possibly be concerned about practical matters with a remark or two on why an assumption may not be so unrealistic as at first glance it appears or why it is a "convenient" assumption. Similarly he has several short chapters in which he discusses some of the implications of relaxing his more obviously unrealistic assumptions. But neither author is directly concerned with explaining "reality" or with providing a tool for the economic policymaker.

Professor Meade's model is concerned with the growth of total income, while Mr. Bensusan-Butt is concerned largely with an invest-

*J. E. Meade, *A Neo-Classical Theory of Economic Growth*, George Allen and Unwin Ltd., London 1961 and D. M. Bensusan-Butt, *On Economic Growth*, Oxford, 1960.

ment programme in an economy in which capital accumulation and population growth are taking place, and only indirectly with the behaviour of total output. Mr. Bensusan-Butt considers the range of problems that are examined by Mrs. Robinson in *The Accumulation of Capital*, while Professor Meade directs his attention to the more traditional growth question: the determinants (and their interaction) of the rate of growth of total output. His assumptions and results are similar to those found in the famous articles of R. M. Solow (*Quarterly Journal of Economics*, February, 1956) and T. W. Swan (*Economic Record*, November, 1956). Both books require and deserve careful reading, and as implied above their study leaves one better equipped to analyze an actual economic situation, if not more informed of the economic world about him.

Professor Meade's analysis is more elegant (though less witty) largely because he doesn't interrupt his argument to worry about tender hearted economists. Mr. Bensusan-Butt's book has an index (although not as good as the one he prepared for Keynes' *General Theory*), while Professor Meade has included three pages of advertisements of other books instead of an index. I will consider each book in turn and then try to make a few generalizations about the total effect.

I

Professor Meade's major assumptions are the following: continuous full employment of labour and capital, perfect competition in all markets, no government of international economic activities, constant price level, flexible relative prices (including wages and rents) and continuous production functions. Furthermore he assumes for much of his book that capital takes the form of a malleable hunk of steel. "Capital" can thus be remolded at a moment's notice to take advantage of changed factor prices or of new knowledge. Finally, he assumes for most of the book that whatever happens to technical knowledge the cost-price of a machine is the same as the cost-price of a consumption good, *i.e.*, the two are the same product.

With these assumptions total output grows as a consequence of increasing inputs of capital and labour and improved technology. The effects of all these are assumed to be additive so the increment in capacity in a given period is equal to the sum of the change in capital stock multiplied by its marginal product plus the change in the labour supply multiplied by its marginal product plus the increment of output due to new knowledge. The percentage rate of growth of output would be measured simply by dividing each part of the increase and the total increase in output by the output at the beginning of the period. As an approximation to the percentage rate of growth of output *per capita* one may subtract the rate of increase in

the labour force from that of the increase in output. One then arrives at the familiar expression that the increase in output *per capita* depends upon the increment in capital per worker plus the increment of output due to new knowledge.

Professor Meade assumes that the rate of growth of the labour force and technological change are exogenous, and not subject to explanation by the economist. Then what happens to the rate of growth of output/*per capita* is determined by the marginal product of capital, the rate of saving, and the proportion of output going to wages.[1] The marginal product of capital will decline as the capital-labour ratio rises, given the neo-classical assumptions. How rapidly it declines will depend upon the rate and nature (to be defined) of technical progress, the elasticity of substitution, and the speed of capital accumulation. If the rate of saving is high, the elasticity of substitution low, the rate of technical progress low and labour-using the

[1] This argument can be set out in very simple terms. Let Y be income, L be labour, K capital, and T the increment in output due to technical progress. Then since

$$Y = f(K, L)$$

for a given technology. and

$$dY = \frac{\partial Y}{\partial K} dK + \frac{\partial Y}{\partial L} dL + T$$

To arrive at the percentage rate of growth, divide through by Y and get

$$\frac{dY}{Y} = \frac{\partial Y}{\partial K}\frac{K}{Y}\frac{dK}{K} + \frac{\partial Y}{\partial L}\frac{L}{Y}\frac{dL}{L} + \frac{T}{Y}$$

But $\frac{\partial Y}{\partial K}\frac{K}{Y}$ and $\frac{\partial Y}{\partial L}\frac{L}{Y}$ are the share of output going to capital and labour respectively. They are also the elasticity of production with respect to capital and labour. Write them as ε_K and ε_L, then

$$\frac{dY}{Y} = \varepsilon_K \frac{dK}{K} + \varepsilon_L \frac{dL}{L} + \frac{T}{Y}$$

and to get the approximate rate of growth of output per capita

$$\frac{dY}{Y} - \frac{dL}{L} = \varepsilon_K \frac{dK}{K} - \frac{dL}{L} + \varepsilon_L \frac{dL}{L} + \frac{T}{Y}$$

Evidently $\varepsilon_K \frac{dK}{K} = \frac{\partial Y}{\partial K}\frac{S}{Y}$ where S is total saving, and thus the statement in the text. If $\varepsilon_K + \varepsilon_L = 1$ then

$$\frac{dY}{Y} - \frac{dL}{L} = \varepsilon_K\left(\frac{dK}{K} - \frac{L}{L}\right) + \frac{T}{Y},$$

an expression which indicates that increments in output per capita are due to increases in the capital labour ratio and to technological change.

marginal product of capital will fall rapidly. If the opposite is the case, *i.e.* if the rate of saving is low, elasticity of substitution high, rate of technical progress high and capital-using, then the marginal product of capital will decline much less rapidly. Whether the growth rate is rising or falling then depends upon these factors.

Professor Meade defines the "nature" of technical progress in terms of its effect on the elasticity of productivity, *i.e.*, on the share of income going to the various factors. One may then think of technical progress having two effects: in the first place, it produces an increase in output *per capita* that would occur with no increase in the capital-labour ratio. In the second place, it alters the production function as to the role of capital and labour in the production process. A neutral innovation is defined as one which results in the marginal product of capital and labour changing in the same proportion that total output changes and thereby leaving the shares of output accruing to capital and labour—assuming each receives its marginal product—unchanged. A capital-using innovation would result in the marginal product of capital rising by a larger percentage than output and thereby raising capital's relative share of total output. It is obvious then that if innovations are capital-using, the marginal product of capital will decline less as the capital labour ratio rises than would be the case if the innovations were neutral or labour-using.

Technical progress may also of course alter the elasticity of substitution between capital and labour, and also create a situation in which external economies exist. This too would offset the behaviour of the marginal product of capital as its quantity increases.

Whether the saving income ratio changes through time depends of course on a variety of factors, and Professor Meade does not dwell on this problem. He does note that changes in share of output going to capital may produce changes in the proportion of income saved. He does not work out some of the obvious implications of this assumption, *e.g.*, the capital-using innovation will tend to prevent the marginal product of capital from declining as K/L rises, but the same innovation will produce a higher rate of saving and the more rapid rate of capital accumulation will tend to increase the rate at which capital's marginal product declines. The net outcome of the capital-using innovation in these circumstances cannot be told without further assumptions.

Professor Meade next shows that if the elasticity of substitution among the various factors is equal to unity, if innovations are neutral, and if the proportions of profits, wages, and rents saved are all constant the growth rate of total output will in long-run equilibrium

equal the growth rate of the capital stock. Briefly this can be demonstrated as follows:

the rate of growth of the capital stock is $\frac{sY}{K}$ where s is the proportion of income saved (assumed constant), Y is output, and K the total capital stock. If $\frac{dY}{dt}\frac{1}{Y} > \frac{dK}{dt}\frac{1}{K}$ then $\frac{Y}{K}$ is rising. But if $\frac{Y}{K}$ is rising with s constant, then $\frac{dK}{dt}\frac{1}{K}\left(=\frac{sY}{K}\right)$ must obviously also be rising.

If $\frac{dY}{dt}\frac{1}{Y} < \frac{dK}{dt}$ then $\frac{Y}{K}$ is declining and with a constant s, $\frac{dK}{dt}\frac{1}{K}$ must also decline.

Only when $\frac{dY}{dt}\frac{1}{Y} = \frac{dK}{dt}\frac{1}{K}$ will $\frac{Y}{K}$ be constant and the rate of growth of income and capital stock are constant and equal to each other.

Although this is an interesting result, it is made less so by virtue of the assumption that innovations are exogenous. For if innovations are exogenous the result is no more (nor less) interesting than one which rests on the assumption that innovations are capital or labour-using or are elasticity of substitution increasing. Perhaps a more revealing approach would be to seek a behaviouristic expression to account for the pattern of development rather than relying exelusively on a mechanical arithmetical expression. For example, the share of output accruing to capital—say $\frac{P}{Y}$ — divided by the capital output ratio— $\frac{K}{Y}$ —yields the rate of return on capital. If entrepreneurs seek to protect their profit rate (or allow it to change in a particular manner) then formulae can be derived that would show how innovations must behave—more appropriately, how entrepreneurs will seek to make innovations behave—in order to produce a given profit rate. (See H. J. Bruton, "Innovations and Equilibrium Growth," *Economic Journal*, September 1956).

As long as innovations are assumed to be outside the maximizing process of the firm, the growth model will be defective. This is so for two reasons: because technical change apparently accounts for a much larger proportion of the growth of output than does increased capital and labour, and because technical change affects not only the rate of growth of output but numerous other things as

well. Professor Meade, for example, in assuming that the elasticity of substitution among the factors is (and remains) unity is assuming something about the nature of innovations. Since it is impossible to consider all possible assumptions relating to all the impacts of technological change and since, further, there is no *a priori* reason to single out one set of impacts over all others and investigate that set, it appears essential to incorporate the explanation of innovations —both magnitude and nature—into the system. No doubt this is now possible only in a very limited way, but it appears more useful even now and certainly for the long-run development of the theory than the approach Professor Meade has chosen.

Furthermore, Professor Meade's treatment of innovations implies that they are made available at no cost to the society. This is not only "unrealistic" (especially so in the absence of international economic transactions) in the usual sense, but it also results in misrepresenting the role of capital in the growth process. For investment in the search for new inventions requires non-consumption just as does investment in a machine. And investment in research is especially risky and may be extremely capital intensive. (See the several studies on investment in research by C. F. Carter and B. Williams that have appeared in recent years). To ignore the cost of new invention and to make the assumption that technological change results in a larger output with the same quantity of inputs represents a distortion of how growth actually takes place. In particular it represents a distortion of the resources needed for growth.

Professor Meade next relaxes his assumption as to the malleability of capital. He notes that one of the main problems of maintaining equilibrium in economic growth is to keep the amount and the form of the supply of machinery in line with the total labour force which must be employed with it. To solve this problem primary reliance is placed on changes in factor prices (profits and wages) and on an income distribution theory along the lines of Kaldor. (See the latter's "Alternative Theories of Income Distribution," *Review of Economic Studies*, March 1956). If profits, wages, and income distribution adjust immediately in such a fashion that a "balance between man and machines" is continuously maintained then we are back virtually with the assumption of the perfect malleability of capital. Professor Meade is surely right in emphasizing the importance of this problem, but it is surely wrong to assert that price flexibility, changes in income distribution, and a stabilizing financial policy can "in the real world" maintain that balance. The forces at work in the short run in a growing economy—even a neo-classical growing economy—will not permit the neat adjustment required to make meaningful assumptions about continuous full employment at a stable level of prices. Indeed the recent economic history in the United States and Great Britain suggests strongly that,

even in the relatively long run, wage and profit adjustments will not take place in a manner that permits full employment and price level stability. Perhaps it is in this area that neo-classical assumptions have become the least applicable and Professor Meade's argument the least rewarding.

Similar remarks may be made with respect to the chapter "The Price of Capital Goods". If the assumption of perfect substitutability between capital goods and consumer goods is dropped, it is necessary to consider how prices of these two goods must move if long-run equilibrium is to be maintained. Evidently technical progress may favour the production of one good relative to another, as also would differing factor intensities. It is also likely of course that the rate of growth of the capital stock will exceed the rate of growth of the labour supply. Then the wage rate must rise relative to the profit rate in order to induce the entrepreneur to use the more capital intensive methods. Then again here wage rates and profit rates (or the price of capital) must move in a prescribed way and at a prescribed speed to achieve the neo-classical equilibrium. As noted at the end of the preceding paragraph the assumption that wage and profit rates will adjust appropriately is not a very rewarding one, especially so as the latter rates drop very low. There seems little doubt that if the burden is not carried by wage and profit rate flexibility, it must be shifted on to innovations. This means that innovations are required not only to increase output and to prevent the marginal product of capital from declining, but also to solve the problems that in simpler days were solved by wage and profit rate changes.

An interesting chapter on depreciation concludes the main text, but as it is only indirectly related to the central problem of the book I will not discuss it. Also there are three appendices dealing with "The Elasticities of Substitution Between Three Factors," "A Two Product Economy," and "Depreciation by Sudden Death". These are elaborations with considerable mathematics of the points examined in the text, and I will not discuss them here. The mathematics is not advanced but is a bit tedious, and working through these sections is a healthy exercise if not a revealing journey.

Professor Meade's writing is extremely lucid, and his analysis clarifies a number of issues in a way that is helpful indeed. As already observed the assumptions under which he operates are well-known and no one should be surprised at his results. The major shortcomings of such assumptions, as far as throwing light on real phenomena is concerned, have to do with technical change and the pricing system. It is indeed doubtful that technical change can be effectively examined by simply adding it to the increments in inputs. Similarly assumptions about a smooth, quick working price system

that at once reflects relative scarcities of men and machines do not effectively isolate the forces at work in virtually any economy. Since how the price system operates is an essential part of the growth problem, this defect is not unimportant. It cannot, incidentally, be ruled aside, as some economists (not Professor Meade) think, on the grounds that growth is a long run problem and in the long run most pricing systems will accurately reflect relative scarcities. For what happens in the long run depends in part upon what happens in the short run.

II

Mr. Bensusan-Butt's book consists of two models, one in which the only motivating force is capital accumulation and one in which population growth is also occurring and land therefore becoming scarce. The assumptions, more than twenty in all, are carefully laid down at the outset (or the reader is warned of their future appearance) and the very limited nature of the problem emphasized. The analysis is in prose (no mathematics except for a formula or two), but use is made of several ingenious diagrams that were much fun to study.

In the first model the story begins in an economy with no capital, and a windfall is assumed that allows some segments of the population to save. The problem is to examine how the industries of this economy change from purely handicraft industries into capital using industries. Each period investment adds to the stock of capital, and this new investment will be distributed so that the following year, when the new capital is completed, the return to all capital is equal. This rate of return will depend on the quantity of capital in existence, on demand for the goods produced in the capitalized sector, and saving habits. As more capital is created, the potentialities of further profitable investment decreases and the profit rate falls. As the profit rate falls so too does the price of goods made by capitalistic methods because profit is part of cost.

This is a very simple, straightforward argument consistent with many other theories of capital accumulation. Mr. Bensusan-Butt makes much of his assumption on discontinuity. He is unwilling to make the customary marginal equalities his guiding light for reasons that are not clear to me. (He says continuity is an unrealistic assumption, but so are many others that he employs). Exactly how the capital accumulation process ends depends chiefly upon what the saving habits are and what happens to real wages.

The working out of the model is followed by short "note" chapters : notes on techniques and commodities, on labour, on competition. These chapters contain some revealing asides—*e.g.*, disguised unemployment is really not unemployment at all, but pre-

ference for leisure at very low level of wages—and an effort to examine the implications of a relaxation of some of his earlier assumptions—*e.g.*, suppose all labour is not exactly alike. In these sections I often found myself in agreement with the remarks, but doubtful as to the conclusion. The notes on competition for example contain observations that are not only interesting, but important and need additional elaboration. But the conclusion that in a wide variety of cases the economy behaves as if it were competitive is surely open to serious question.

The second model begins to move when population growth results in all land becoming occupied and rent emerging as real wages fall. Here a whole series of stories are possible depending upon distribution of land, farming techniques available and used, composition of demand, exact form of population growth function, etc. In this part Mr. Bensusan-Butt seemed more taxonomic than a commanding economic argument allows. However he is seeking to theorize on problems about which few empirical generalizations are firmly established and one assumption has about as much claim to acceptance as another. So again here how the story ends depends (of course) upon what set of rules you choose as to the variables mentioned above.

This section is also followed by a series of "notes on" chapters: notes on models, on cultural change, on uncertainty, on money, on the state, and on welfare. A remark similar to the one made above on the earlier note chapters is again applicable here.

Mr. Bensusan-Butt's argument does not emerge as clearly and as well drawn as Professor Meade's. This is partly a matter of style and method, but also a matter of the content of this models. The book gives the impression that its author has read and worked and thought on theorizing about growth in a very careful and systematic way. As a result he has a lot of useful and important things to say, but these things do not jell together in the neat, lucid fashion that characterizes much of modern model building. The book is no less valuable for this characteristic for—as already noted —its author is not only careful and thorough, but an economist of great insight and many of the things he says must be considered in future theorizing efforts.

III

The books are somewhat complementary. Professor Meade is concerned with the growth of total output and not at all with the question of an investment programme. Mr. Bensusan-Butt's interests are exactly the opposite. But they hardly can be said to mesh very

well largely because of the different manner in which the two authors approach their subject. But they do provide the material for a meshing.

The total effect of the two books seems to be this. Economists do know a lot about growth but problems keep cropping up. The insistence (correct insistence in my view) on elegance and rigour leads to a long series of assumptions that often simplify, often distort reality. To incorporate all growth-affecting variables into a single model is doubtless impossible except at a uselessly high level of abstraction. To approach the subject by a series of simple models each of which is built on different assumptions may provide the most efficient way of covering ground. It means that any single model is not of great importance, but that an understanding of all such models will provide the tools with which growth may be understood and even growth policy formulated by an exceedingly wise man—but he does need to be exceedingly wise as well as to know his models.

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REVIEWS

Marketing Livestock and Meat by R. F. BURDETTE and J. C. ABBOT, (Rome: F.A.O. Marketing Guide No. 3 1960, pp. 191 $2.00 or 10 s.).

To permit advance to rest entirely upon laissez-faire, in marketing as in other fields, is being found to be both costly and time-consuming. Improvement in agricultural marketing is therefore increasingly becoming an important item in the charters of development of underdeveloped economies. Development of an efficient marketing structure, though of continued significance to producers, consumers and middlemen, is now notably gaining attention from governmental authorities.

While a refinement of practices in the marketing of the already established commodities is receiving emphasis, importance is also being given to the comparatively new commodities which are gradually being introduced into the consumption and production plans of developing economies.

Nutritional standards demand a change in the conventional subsistence diets which are so usual in backward economies. And the need to supplement incomes in the agricultural sector warrants the introduction of new items in production patterns. Livestock and livestock products, it is found, could provide this supplement to the diet of consumers and to the incomes of producers in many countries.

The publication under review deals with the marketing of livestock and livestock products. It is a third of a series of marketing guides prepared by the Food and Agriculture Organization of the United Nations, under its scheme to promote better agricultural marketing in its member countries. It has been evolved after an intimate association with problems in livestock and meat marketing in a number of regions in Latin America, the Near East and Africa and is devised mainly to present " in a convenient form basic information and practical principles likely to be helpful in the improvement of livestock and meat marketing." It comprises of eight chapters which cover exhaustively the entire range of problems that arise and are likely to arise in the course of marketing of meat and livestock.

The assessment of the close inter-relationship between efficient production and efficient marketing is adopted, most effectively, as a starting point for the main study. Improvements in marketing in

the meat and livestock trade involve such specialisation and are at most times so capital-intensive that in order to prove economic they would have to be preceded by proper production plans. Expense on marketing improvement would be justified only if the products dealt in area of such quantity, quality and value, as to deserve such expense. However efficient a marketing system it cannot increase the returns to the farmer for a product which is mediocre in itself. The authors, therefore, lay down, to the advantage of those concerned, some important instructions for the improvement of practices at the farm level which will promote not only better but less costlier marketing.

The marketing period or the time of sale of farm products is dictated by various factors. While convention and climatic conditions have been long accepted as responsible forces, it has not been often shown that institutional factors such as tax levies may also be important causes for harvest-time gluts. The authors do well in stating this point. For livestock, the need to pay Government dues may result in the marketing of stock which is not quite ready for the market. While convenience demands that revenue payments should be collected at a time when the producer is most likely to be able to pay, these assessments should not deliberately aggravate conditions that lead to inefficient marketing.

Market intermediaries, particularly those at the assembly stage, are rarely acclaimed for the essential services they render—it being usual to condemn their presence because of the large share of the marketing margin accruing to them. The authors of this guide clarify many misconceptions when they state the important functions performed by dealers in the livestock trade. They show, how, because of their knowledge of market prices and conditions in different parts of a market area and also because of their willingness to take risks, the dealers help in keeping prices at different markets closely in line and provide thus an important safeguard for livestock sellers, particularly in distant locations. "Usually it is the individual livestock dealer who opens up new market channels and finds a way of moving stock over difficult routes to profitable outlets."

While the above citations are a few of the important points made, the publication as a whole deserves unreserved credit for the practical approach adopted by the authors towards the problem. While advances in marketing modes are realized for their worth, they are not advocated indiscriminately for all areas. Suitability of traditional methods is well recognised and old methods are not deprecated as is so often the practice, merely because their origin is in history. Free play of market forces, and minimum intervention coupled with adequate provision of facilitative services are, in the

opinion of the authors of this guide, the proper setting for achieving maximum efficiency in marketing.

There are a couple of points on which the reviewer, however, finds herself in disagreement with the authors. In the sub-section on grading the authors feel that grading cannot supercede a change in consumer preference—better quality products may remain unsold for want of clientele. While the above possibility cannot be ruled out, would it not be helpful if grades were introduced to induce an initial change in consumer preferences or—if the phrase will be permitted—in consumer discriminatory sense? Secondly, the authors state that the criterion for judging the efficiency or otherwise of a marketing organization is not necessarily the relative *number* and *type* of middlemen who operate it. While it is possible that the existence of the various *types* of middlemen may be necessitated by complexities in production methods and the absence of external economies, are not excessive *numbers* within each type (*i.e.*, at each stage) indicators of waste of resources and duplication of effort?

To conclude it may be said that though the book is primarily designed to be of interest "to private and co-operative enterprises and public bodies facing decisions on livestock and meat marketing methods and development policy," in the opinion of the reviewer, the value of this manuscript shall far surpass this restricted aim. The meticulous care with which the entire subject is dealt with, should prove most instructive to all who have a problem to solve and improvements to effect, whether it be in marketing or in any other field.

Bombay, (MISS) Z. Y. JASDANWALLA

Population Growth and Economic Development in Low-Income Countries: A Case Study of India's Prospects by ANSLEY J. COALE *and* EDGAR M. HOOVER, Oxford University Press, London, 1959, pages 389, Price Rs. 25.

THERE have been many books on the Indian population problem, but one has been waiting for a long time for a really scientific work, bringing out clearly the two-way relationship between population movements and economic growth, in the light of the actual situation and trends in India. Coale and Hoover have tried to satisfy a long-felt want and they have been immensely successful in the task. It should be possible to write a very interesting review of their book when the 1961 census figures have been published in detail. As far as one can judge now, one can probably say that

the 1961 census data will substantiate most of the conclusions reached by the authors.

The whole book, running to nearly 400 pages, is divided into five parts. The first part discusses in two separate chapters the reciprocal effects of population growth and economic development upon each other. The second part contain three chapters on India's population trends, including an attempt to estimate the prospective changes in fertility and mortality. The third part deals with the problems of economic development in India from the special angle of the demographer, while the fourth part seeks to study the effects produced by population growth on labour supply, growth of income, income-allocation and other factors operative in the process of economic development. The final part tries to apply some of the conclusions reached in the first four parts to the case of other low-income countries with different demographic conditions, with some emphasis on Mexico as a typical case.

It would have been relatively easy for the authors to construct purely theoretical models, including different assumptions regarding population growth and saving-investment behaviour. The exercises undertaken by Leibenstein are well-known, and one notes that even elementary treatises now include the demographic factor in constructing the basic models. One also notes the emptiness of most of the models of this type: they canalise understanding into unreal channels, create the belief that a very special theory is the general theory, and, of course, mean nothing to the policy makers. The special feature of the Coale-Hoover analysis is that the assumptions made—whether about the demographic factors, or about technological and economic behaviour—are close to the realities of the Indian situation and are therefore of immediate interest to the students of Indian economic problems and to policy makers.

In the first part, the authors bring out clearly the situation resulting in compensatory high birth rates in pre-industrial communities and show that substantial economic improvement is a sufficient condition for a decline in deaths, but not a necessary condition. Paralleled with this stands the disconcerting fact that unbanisation alone is not a sufficient condition for a decline in fertility. The authors also point out the need for a proper dynamic analysis of the relation between population and economic growth: a study in terms of alternative population sizes ignores the effects of the process of change from a small population to a larger one, or *vice versa*, and therefore gives an unreal picture of the situation. This is a point which is often forgotten in the studies of economic development problems—comparative statics is not a substitute for dynamics in the analysis of development problems.

The second part gives a detailed analysis of the population structure of India and also seeks to look into the future. It is interesting to note that, with fertility assumed unchanged, the Coale-Hoover estimate for the total Indian population in 1961 is 424 million, which may be compared with the Planning Commission's estimate of 431 million and the provisional census total of 438 million. The estimate for 1971 is 532 million in the Coale-Hoover projection and 528 million in the Planning Commission tables. If fertility declines linearly by 50 per cent between 1966 and 1981, the Coale-Hoover figure for 1971 would be 524 million. An estimate is also given in terms of a decline in fertility starting in 1956, but it is pointed out that there is no evidence of such decline; the 1961 census figures make one doubtful if such decline will start even in 1966. There are also illuminating estimates regarding the prospective changes in age distribution under different assumptions regarding decline in fertility. For example, with a 50 per cent decline in fertility between 1956 and 1981, the 15-64 age-group will increase from 58 per cent of the total population in 1951 to nearly 65 per cent in 1981. .The 0-14 age-group will fall from 39 per cent to 30 per cent. The rises and the falls are not always monotonic, and, therefore, the problems of the intermediate stages may sometimes be more difficult than those of the end of the period.

All these estimates yield totals which are larger than those estimated by most other bodies. The main reason is that the Coale-Hoover estimates are based throughout on the assumption of a rapid decline in mortality. According to the authors, there is less uncertainty about the probable course of mortality than about the probable course of fertility. The experience of other low-income countries where public health campaigns have been implemented and the experience of the anti-malarial campaign in Ceylon have been used. It is, of course, recognised that there is a level at which the decline in the death rate would flatten itself out and that it takes a long time to experience the full cumulative effects of a change in the rate of decline in the death rate.

In regard to fertility, the authors show that there has not been any significant downward trend in India and that the total effect of the existence of some low-fertility pockets has been negligible. The authors are also doubtful of the thesis that industrialisation (of the degree feasible in India) would lead to an appreciable decline in birth rates and they cite historical illustrations to substantiate their doubt. Some caution, however, is necessary here. It is, of course, true that the effects of economic development, urbanisation and decline in mortality upon the birth rates would be slow, but it is certainly not permissible to go to the other extreme and brush these factors completely aside, especially when one is thinking in terms of 1981 or 1986. If there are illustrations which go against

the thesis that economic development or a decline in deaths would reduce fertility, there are also historical cases which support the generally accepted thesis. The rate of economic development in India in the next two or three decades may not be as fast as in Japan in the interwar period, but it is likely to be faster than the rate experienced by Ceylon in the twenties, or in the Japanese colonial administration in Taiwan between 1908 and 1942. If the decline in mortality is able at least to eliminate the compensatory births, there will be some effect over a three-decade period. There is also the important fact that the separate arguments against each factor suggested as a fertility-reducer cannot be added together to get a total of arguments against all the factors operating together.

The third part of the book contains a detailed analysis of the important elements in Indian economic development. There is a balanced discussion on the prospects of agricultural production, showing that India's food output is likely to increase as fast as population (so that there need not be any deterioration in nutrition), but there is little prospect of an appreciable increase in the *per capita* farm output. The authors emphasize the need for increasing agricultural production substantially as a necessary condition for economic growth and present the basic contentions of the balanced-growth argument. It is also pointed out that a slow rate of agricultural growth is likely to limit non-agricultural production, rather than *vice versa*. Manpower supply will not certainly be a limiting factor and one can assume away the prospect of the adoption of policies which would limit development in the interest of maintaining or raising the relative income levels of cultivators.

The conclusion that food production will increase as fast as population is not the same as the conclusion that food production will increase as fast as demand. Taking Palvia's figure of 0.8 as the income-elasticity of demand for food in India, the authors show that even a 2.8 per cent annual increase in agricultural production will not meet the increased domestic demand over a 30-year period, during which both population and income will increase. Different import requirements are then worked out under different assumptions regarding fertility and rise in *per capita* income. Taking the balance of payments problem as a whole, one easily comes to the conclusion that there will be an imperative need for the expansion of non-agricultural exports during the next three decades.

In the field of non-agricultural output, the centre of the author's attention is the problem of financing. This is a well-trodden ground; the authors bring together a large amount of information about savings rates in the different sectors, including the non-monetised sector. One has to be extremely cautious in making forecasts, but those made by the authors here are conservative. They

expect that retained corporate earnings will increase faster than the national income, that Government revenues will rise from 9-10 per cent of national income in the sixties to 10-12 per cent in the seventies and that smaller enterprises and individuals will continue to save only a small fraction of their incomes. There are, however, reasons for not sharing their optimism about the role of co-operatives as important generators of saving and investment in the coming years.

The fourth part discusses how the Indian population growth is likely to influence economic development. Three aspects of the problem are particularly emphasized: the effects of population growth on labour supply, on the allocation of output, and on the capacity and motivation for work and economic change. Labour supply projections are made for the period 1956-1986 under alternative population projections: the estimated number of persons in the labour force (age-group 15-64) in 1986 comes to 385 million under a low-growth projection and to 417 million under a high-growth projection—against the actual total of 223 million in 1956. It is not only important to note the estimated increase in the number of employment seekers; there is also the fact that the difference between the two alternative projections is 32 million, showing how estimates regarding capital-labour ratios are likely to go astray. From these estimates are also derived further estimates regarding the increase in the total consumer demand, in terms of the increase in the number of "equivalent adult consumer"; their number is likely to increase, under the high-growth projection, at the rate of 2.1 per cent per year between 1961 and 1966, 2.3 per cent per year between 1966 and 1971 and 2.5 per cent per year between 1971 and 1986. Under the low-growth projection, the percentage is likely to decline from 1.8 per year between 1961 and 1971 to 1.1 per year between 1981 and 1986.

These estimates show the minimum requirements of planning. There is, of course, the thesis that population-growth will itself be a stimulating factor, while its slackening is a stagnating force. It is easy to dismiss this thesis in an underdeveloped country with major bottlenecks and scarcities and an overall rigidity of the economic structure. One cannot even feel sure that increase of population will lead spontaneously to increased investments in housing and outlays for social welfare. Taking the high-growth projection, one gets a three per cent annual increase in the national income as a minimum requirement, and investment has to be adequate for attaining this minimum.

There is a provoking chapter dealing with the likely effect of reduced fertility on economic growth. A model is constructed in which the total investment (public plus private) in any year is base-

year investment plus another amount depending on the rise in *per capita* income above the base-year figure. The starting premise is thus $I_t = I_o + a. \quad (Y_t/C_t - Y_o/C_o) \cdot C_t$, where C stands for the number of equivalent adult consumers, and I and Y respectively for investment and national income. Taking I_o = Rs. 1680 crores and a = 0.3, the authors get the relation $I_t = 0{\cdot}3Y_t - 49.27Ct$ crores. If now I is broken down into I_g and I_w —investment for growth and investment for welfare—and if I_w is further broken down into welfare investment necessary on the basis of the current needs of the existing population and that necessary for providing facilities for additional population, one gets more comprehensive final equations. One can go further and take coefficients to indicate the direct growth effects of welfare investment. With a number of alternative assumptions in regard to the accelerator, the direct growth effects of welfare investment and the income-growth effects of investment outlays, the projected income per consumer in 1986 varies between 126 and 157 (1956=100) under the high fertility assumption and between 176 and 233 under the low-fertility projection. The parameters chosen are not unrealistic, but one notes, of course, that the introduction of a large variety of variables and parameters, not all based upon a thorough econometric investigation, may lead to results somewhat confusing to the policy makers.

The final part goes outside India and takes especially the case of Mexico for testing certain hypotheses and conclusions. One of these is that the reduction of fertility tends both to increase the supply of foreign exchange and to make it easier to use this supply for purchasing capital goods. This is based on the premises that under reduced fertility, the total supply of development capital will be larger, that the share that could be devoted to export industries would be larger and that the share of the foreign exchange required for importing consumer goods will be smaller. This ignores the possibility that the income-effect of reduced fertility might lead to a larger domestic demand for home output, for exportables and for consumer goods imports. One may probably feel that a reduction in fertility in a capital seeking country would create a better psychological atmosphere in capital-exporting countries, but the effects on imports and exports would depend on a multitude of factors, not all of them easily predictable.

The value of the Coale-Hoover work lies not so much in the general lessons derived from the Indian case as in the detailed and intensive analysis of the specific Indian problem. The authors have succeeded in achieving what practically no other student of Indian economics has been able to achieve up till now. There have been better books on the purely demographic aspects of the Indian popula-

tion problem and there have been better studies of the problem of economic development of India. But there is no other book on par with this one in bringing together the problems of economic development and population growth in their inter-relations with each other.

Calcutta. BHABATOSH DATTA

Central Banking in South and East Asia, by GETHYN DAVIES (ed.), Oxford University Press, 1960; pp. 181, Price HK. $18.50.

THIS tiny book lucidly recounts the experiences of eleven countries situated in South and East Asia (namely, Burma, Ceylon, Nationalist China, India, Indonesia, Japan, South Korea, Malaya, Pakistan, Philippines and South Viet-Nam), in the art of central banking. In most of these countries, the central banks have come into existence during the post-war period. From the accounts rendered by acknowledged country experts, one is forced to come to the general conclusion, that in the brief span of their existence, all the central banks have justified their creation and given a positive lead to their respective economies.

The objective sought to be realised by establishing the central banks in these two areas, may be considered to be those summed up by the Editor, in terms of three paramount functions. The first is that "a central bank can help to finance government spending"; the second is that, "it can promote the sound expansion of ordinary banking and credit facilities"; and the third is that, "it can alleviate the effects of foreign trade fluctuations on the level of domestic activity and prices." (*Vide* p. viii, Introduction).

To this enumeration we may *add* two further vital objectives, in order to make the list complete. The first is that even if there is no real and pressing case for a central bank, there might nevertheless be a sound reason to establish one, for "a central bank has become a symbol of monetary independence, without which political independence is thought to be incomplete." (International Bank Mission 'Report on the Economic Development of Malaya,' (1955) p. 168). In the second place, the area consisting of the region South and East Asia, has in the post-war period been obsessed with an urge to rapidly raise the standard of life of its people. The ideal criterion to achieve this goal is the golden, but the elusive, mean of development with stability.

In a majority of cases the first two objectives have been fairly well realised, provided the fourth objective is considered an axiomatic condition. The central banks have served as unqualified vehicles

for manufacturing credit required by Government; thereby vindicating the pessimism of orthodox critics. However, in many cases this has not been the fault of the central bankers. The pressure of the Treasury has reduced the central banks to the status of a Government department a loss of independence most necessary for the proper discharge of its monetary discipline obligations. At one extreme is the case of South Korea (or Ceylon for that matter), where " monetary policy " is " under the direct control of the Minister of Finance " (p. 88). At the other end of the line is the case of Philippines, where the Monetary Board, the supreme deity over the monetary sphere, was considered by President Magsay-Say as obstructing progress. " Inevitably this undermined the independence and prestige of the Monetary Board. These have not been recovered " (p. 181).

The only exception to the rule is the case of South Viet Nam, where the conflict between the central bank and Government " does not exist " (p. 188). There is, however, a special reason for this behaviour, namely a very liquid position of the Government due to the American Aid counterpart funds. This has not necessitated the Government to have recourse to the central bank for credit assistance.

In so far as promotion of sound banking and credit facilities is concerned, almost all the countries have devised methods to achieve this aim. This has gone the farthest in the case of South Korea, Indonesia, Pakistan and India. For example, in the last country, the introduction of the Bill Market Scheme, the supply of cheap agricultural credit, the increased flow of industrial finance through development banks, development of a sound system of banking by encouraging branch expansion and through the system of surprise audits, and providing training facilities for supervisory commercial bank personnel, have resulted in integrating the money market and led to a relatively more effective performance of the conventional and non-conventional weapons of credit control (p. 45-50).

Finally an evaluation of two more objectives remain, that of neutralising the adverse influence of foreign trade and assisting economic development. By and large most of these countries have, in their initial mood of exuberance freely spent away their foreign exchange reserves. This forced them to innovate the exchange control mechanism, so that perhaps with the exception of current liberal exchange policy in Japan, the rest of the countries suffer under strict controls.

Since the mevements in foreign trade are extraneously born, and there happens to be a predominance of one or two commodities as export earners, the violence of the business cycle has not been reduced.

However, the central banks have assisted in easing the predominantly adverse external influence within the national economy.

Now to overcome the dependence on one or two commodities serving as export earners, the diversification of the domestic economy is essential. This is the task of economic development in this area, with the exception of India and Japan. But to what extent the goal of "development with stability" has been realised is a mute point. It definitely is not the case in India, nor Malaya, nor Indonesia, nor Ceylon, nor Burma. Even Japan, in a class by itself, had a tough time in achieving this rule in the initial post-war years.

The non-realisation of the goal of development with stability might have been due to the limited scope of operations of the conventional monetary weapons. With a few exceptions, most countries relied on the Bank Rate policy to curb the inflationary pressures. This at best has psychological repercussions and, if wielded in exclusion to the open-market and variable reserve policy, must yield a limited benefit. The absence of open-market operations is due to 'the lack of ammunition,' namely a bond market; while the variable reserve policy was sought to be recently innovated, as in the case of Burma and India.

Bombay. KERSI DOODHA

Social Theories of Fertility and the Malthusian Debate by D. E. C. EVERSLEY, Oxford: Clarendon Press, 1959, pp. 313, Price £1.15s.Od.

THIS book has developed basically from the author's lectures delivered before the students of the University of Birmingham, on "recent trends in population movements and theories associated with these." Mr. Eversley was influenced by two factors in writing this book. He felt that (1) "a history of theories can add materially to our knowledge of any past period if we learn from it what men thought about various aspects of science, theology and politics" and that (2) "an analysis of past bodies of theory is of great help to the present student in almost every field" (pp. 3-4). Since some might feel that the U.N. publication "Determinants and Consequences of Population Trends" has already met such a need, Eversley maintains that "there is still room, however, for a full analytical treatment fitting the major trends of thought into the framework of social and economic history" (*Ibid.*).

The author is aware of the wide range of his subject which is spread over a number of fields outside his own and of the inevitable 'defects in structure' in argument and 'arbitrary judgements'

(Preface, p.v.), but he tries to compensate to some extent for this limitation by confining his attention to the theories of fertility in general and to their sociological aspects in particular. The book he has produced is a piece of serious work and serves its purpose well by presenting a critical evaluation of several important theories of fertility.

The book is divided into nine chapters. Following a brief introductory chapter, the effects of luxury and urbanization—sometimes thought to be associated—on fertility are discussed in the second chapter. "The luxury argument," according to Eversley, "may be said to have been the legacy of the ancient world to the eighteenth century" (p. 35).

Ideas recognising large differences in economic status, prevalent in static societies, and divergent social attitudes associated with these differences were expressed by many writers. These ideas have been discussed in the third chapter. Some writers (*e.g.*, Johnson, Thomas Short, and W. Temple) thought that poverty and high fertility were inseparable. Montesquieu was the only person who rejected the theory that poverty generally leads to large families. The liberal sociologists evolved a prosperity theory of population in contrast to Lassalle's Iron Law of Wages. They considered the fertility of the poor to represent the 'normal' pattern and suggested that the reproductive behaviour of the rich indicated deviations from the normal, varying directly with the level of economic welfare. Last section in the chapter shows how concern for children is "one of the most powerful causes of abstinence from marriage and limitation of children after it" (p. 88).

Chapter IV deals with the economic basis of voluntary restraint of fertility in a rapidly developing society and with the related changes in the attitudes of the people. Eversley surveys the debate between Nassau Senior and Malthus and points out that several authors after Malthus were essentially accepting and enlarging on Senior's thesis that a taste of comforts (or what Senior called 'decencies') may lead labourers (or the common people) to cultivate prudential habits. Eversley then examines various writers who anticipated Dumont's social capillarity theory suggesting that, like oil in the wick of a lamp, the individual tends to rise in the social scale and that in this process of climbing becomes less and less likely to reproduce himself. The outlook of Dumont was, of course, biased by his attitudes towards contemporary social trends but he had the merit that "when many scholars (notably in Germany) were still floundering in discussions of potential fertility and agricultural productivity, Dumont firmly steered thought towards social psychology" (p. 120).

Property, civil liberty and education are assumed to form the political and social basis of voluntary restraint of fertility in a developing society (Chapter V). Eversley discusses two mutually contradictory beliefs held by various authors regarding the effects of redistribution of property on fertility. The eighteenth century writers like Hume and Wallace condemned inequality on the ground that it caused depopulation. Eversley endorses their conclusion that greater equality in the form of an increase in tenant cultivation would help raise the birth-rate, as logical; and he exonerates their failure to prove their theories. The nineteenth century writers, in contrast to their predecessors, advocated equal distribution of property and expressed their opposition to Malthus's defence of the-then-existing distribution of property. The idea of an acceptable minimum had changed. What was demanded was not a tenancy but, to use Nassau's term, a standard of decencies. These writers made out a good case for their view that property leads to a careful attitude towards marriage and children, but Eversley criticises them for their unwarranted assumption that people would have bigger families "if, *ceteris paribus*, they were deprived of personal ownership" (p. 134).

Eversley's suggestion about the probable restrictive effect of the Bhoodan movement on the fertility of the former landless labourers is an interesting hypothesis. However, the quantitative magnitude of the number of persons benefitted by the movement, and the qualitative success of settling them on land are too inadequate to warrant such a hypothesis, if we also remember that the grant of land to the donees leaves their traditional values and norms of behaviour unaffected.

Chapter VI gives a number of theories which are considered 'special variants' of the general sociological ideas. The first of these concerns food—the supposition that richer food or more food leads to infertility, or conversely, that starvation is actually favourable to fecundity. The second section deals with the theory that intellectual activity leads to barrenness—'a persistent, if unproven, assertion'; the third section discusses the highly controversial topic of the effects of religion on fertility. Eversley rightly points out that there is disagreement on facts concerning these hypothesis and further that these arguments reveal an inability "to apply logical analysis" to such facts as were available (p. 168). In the absence of any supporting evidence, these theories are little more than superstitions, showing "signs of having originated from folk-lore" (p. 281).

Theories considering various influences of the social framework on individual are reviewed in Chapter VII. The chapter covers mechanistic equilibrium theories which can be applied to explain

a fall in fertility as numbers increase. The last section analyses the theories based on the observed tendency of birth rates to fall as survival rates improve and as advances in general medicine and public health change the conditions of life of the people.

The last chapter is a very useful summary of the argument developed in this book. One of the valuable contributions of this book is the critical examination of Malthus's writings from a sociological point of view. Professor David Glass has observed that "for a man who put forward a comprehensive theory of economic and social development, Malthus's view of the factors influencing social change was curiously narrow."* Nevertheless, Malthus, better known as an economist, when writing about the tendencies of population growth and the preventive checks, became knowingly or unknowingly a sociologist too. Eversley cites several quotations from Malthus to show that most of the subsequently-suggested theories of fertility have their germs in Malthus's writings. Malthus had noticed the absence of any simple relation between food and population and there are scattered references in his writings pointing out the modifying influences of the form of Government, the state of technology, education, the system of distribution and other social factors. Eversley, however, thinks that 'Malthus should have been more precise about the exact sequences of events and reactions in each case' (p. 255), and concludes, perhaps without adequate justification, that "sheer obstinacy prevented Malthus from building much of the edifice" (p. 260).

Eversley has christened the theory of fertility stating a consensus of modern opinions that the decline of fertility in Western countries in the last century has been caused by developments which we may summarize under the headings of material conditions, political institutions, and social organization, or, more traditionally, the standard of living, democracy, and civilization" as the 'standard-of-living theory' (p. 283). The connection "*in the past*, at any rate in Western countries, between changing patterns of social and economic organization and changing patterns of fertility" is accepted to be "real enough;" but the author feels bound to ask "whether, for instance, the rising fertility of the United States since the depression is not so incapable of reconciliation with the whole or part of the 'theory' as to invalidate it completely" (*Ibid.*). Eversley's 'standard-of-living theory' seems to subsume the theory of demographic transition, briefly described and competently evaluated under the title of 'historical theory' (pp. 276-277), and the challenge posed to scholars by the continuing 'baby boom' in the U.S.A. is indeed serious. Even if the fact that fertility behaviour,

*Glass, David V., *Introduction to Malthus*, C. A. Watts & Co., Ltd., London, 1953, Preface, p. ix.

dependent on an interdependent net-work of a multitude of factors, makes it impossible to provide conclusive explanations, the problem needs more attention from research scholars in demography and sociology.

To conclude, the book under review does not develop any new theory of fertility, but it gives a detailed and effective account of the history of various theories. It is not an easy book to read but any researcher working in this area would find its perusal rewarding.

Bombay. (MRS.) L. V. CHAVAN

India : The Most Dangerous Decades, by SELING S. HARRISON, Oxford University Press, 1960, Price Rs. 20.

EXPERIENCE in newly formed countries in Asia and Africa shows clearly that the granting of political independence does not by its own accord solve the intricate problems of a society in 'transition.' It merely transfers the responsibility of governance to generally less experienced hands. This happens for two reasons: Firstly, under foreign rule the natives do not by the very logic of the system get adequate training in the art of self-government. Secondly, nationalists are always in a hurry, impatient to acquire control as quickly as possible. Sir Ivor Jennings tells us that the late D. S. Senanayake once asked him to prepare a Draft Constitution for Ceylon, saying, that he was in fact less interested in the 'form' of the constitution than in the question of the 'transfer of power' from British to Ceylonese hands. Mr. Senanayake failed to grasp what has now been demonstrated in more than one country, that the transfer of power is not necessarily accompanied by the ability to govern oneself. Moreover, the transfer of power creates for the new leadership problems the like of which did not test the resources of the old. In all the newly-awakened 'plural societies,' freedom has brought to the surface deep-seated social differences which seem to be the normal features of societies in transition. The introduction of democratic institutions in such an environment generally intensifies the prevailing tensions—the new institutions serving as vehicles of old conflicts.

In *India : The Most Dangerous Decades* Mr. Selig Harrison presents a vivid picture of the fissiparous tendencies which now operate in Indian society; of the new regional elites engaged in a bitter struggle with Hindi which in the Constitution of 1950 was designed to be the Lingua Franca on the dethronement of English from its century-old status; of the new caste lobbies and the opposition to brahmin supremacy which has taken the character of almost

a class-war. Mr. Harrison analyses the stresses and strains of the Indian political scene and the cunning strategy of the Communists in exploiting the situation.

As we read through this thoughtful book we ask ourselves many questions: Are the prevailing tensions merely the ephemeral signs of a period of transition or are they indicative of a malignant and perhaps, incurable disease? Will the tensions deepen in an ugly competition for power and influence? What will be the total effect of these tndencies on the constitutional structure of the country and on the Civil Service? And finally, the question of questions—Will democracy take root in such unpromising soil? Mr. Harrison's diagnosis shows clearly that in the coming decades the fissiparous tendencies of Indian society will gather strength and more so in the absence of Nehru's dominating personality. Already the grip of the Congress High Command appears to be loosening Mr. Harrison rightly asks:

"If the Congress High Command cannot challenge a Kamraj now, given a stable political order, what high command of the future can be expected to do better?" (p. 290).

The growth of regionalism will have a singularly unfortunate effect on the Civil Service the 'Steel-frame' of a once proud and powerful British administration. The men who were cast in heroic mould and nurtured in a fine cosmopolitanism will yield place to men of lesser breed with a conspicuously parochial outlook. "All India must suffer from this decline of cosmopolitan leadership" says Mr. Harrison.

Further, regional tensions will intensify with economic development. Already, with local pressures on the Planning Commission the Union Government finds itself in an unenviable position:

"With all parties equally ready to use New Delhi as a whipping boy, the Central Government is placed on the defensive and must constantly justify every planning decision, not only in economic terms but in political terms as well" (p. 327).

Finally, regional loyalties will form the firm foundation of a States-rights feeling which must necessarily weaken the hold of the Union Government. India will face the consequences of an imbalance not experienced hitherto in any other federal system. The growth of regionalism will result in the loss of a national outlook:

"The use of regional text-books, written by authors reared in the new regionally-limited intellectual environment, can all too easily infuse a parochial content into the grist of education itself.

The States Reorganisation Commission warned that even now textbooks in some states include songs 'exalting the regional idea.' History books used in the earliest years of education 'have disclosed a marked tendency to exaggerate the past achievements of the dominant linguistic groups'" (pp. 82-83).

When state administration and university education are carried out in the regional languages India will face a 'crisis in Communication.' What little contact now exists between universities will vanish. No longer will scholars and professional men migrate from one university to another, except in a few exceptional cases:

"Even if he has studied other Indian languages, the young scholar will think twice before assailing alien university bastions where he will be, linguistically at least, an outsider, nor will the lawyer who can make his fortune within one convenient linguistic world go out of his way to build a cosmopolitan practice. If ambition can be counted on to arouse the impulse for careers national and international in their scope, this will be the ambition of the most determined few, while the majority in all walks of life will find worlds enough to conquer in the churning new life of home regions, which number, after all, tens upon tens of millions" (pp. 87-88).

The passion for regional languages has already resulted in a distaste for—and a distrust of—Hindi as a Union language. The new regional elite will be totally ignorant of any language other than their own. The soil will then be fertile for a rich crop of language fanatics in every state. Democracy will not spare the country for the electoral system might well catapult these to the Capital where India's Parliament will then present the unhappy picture of a modern Babel. In other words, when 'regionalism' reaches the Centre the final stage in the disease would have been reached.

It is often argued that India's historical heritage and the fundamental unity of Indian culture will stave off any possible breakdown of Indian society. But in the history of disintegrating societies the nostalgic return to the past has itself been the sign of present failure. More crucial is the question: How long will the Past unite us? In a splendid chapter entitled "Past and Present" Mr. Harrison shows how regional histories are being rewritten—perhaps unconsciously—to pamper local prejudice. "For all practical political purposes," Mr. Harrison warns us, "the past with all its powerful memories is abandoned to the regional rivals of Indian nationalism."

The prospects of democracy when viewed against this background are bleak. "The odds are almost wholly against the survival

of freedom ... and in 'the most dangerous decades,' the issue is in fact, whether any Indian state can survive at all."

The stresses and strains of Indian politics might well prepare the ground for the onslaught of an outside power. It is significant that the 'most dangerous decades' coincide with the Chinese threat on the Indian borders. Will contemporary Indian disunity appear to the historian of the future as tailor-made for the success of Communism? Time and again in human history the triumph of an "external proletariat" has merely put the stamp of success on an internal failure. It is also necessary to remind ourselves that the process of disintegration has never been lineal: initial successes might often be the deceptive footsteps to the grave or to change the metaphor, the body-politic even before it dies makes spasmodic efforts to survive. Professor Toynbee pictures this struggling failure in a suggestive phrase—"Rout, Rally, and Rout" and Mr. Harrison echoes this thought when he says that "India is likely to experience a succession of political shocks as centrifugal and centripetal forces alternatively gain dominant strength."

It would be a huge mistake to dismiss Mr. Harrison's book as 'dismal' or to condemn him as a Prophet of Doom. It is true that he presents one side of the picture but it is the side which is most important when we consider the struggle for freedom and democracy in Asia. Nor has it been Mr. Harrison's aim to produce a "best-seller" with some sensational writing. It is necessary to recall the quotation from Harrison Brown's Gideon Seymour Memorial Lecture which is prefaced to the book :

"I would now like to say that if I really thought this dismal future ... were inevitable I would not be with you discussing the matter. If a friend of mine were suffering from an incurable disease, I would not be inclined to give him a vivid description of the nature of his disease nor a detailed outline of his future agonies. On the other hand if I believed by friend's disease curable, and if an understanding of his difficulties were a prerequisite for the cure, I would be inclined to describe his disease to him and to project its course into the future as best as I could."

Bombay S. P. AIYAR

Annotated Economic Statistics of Japan, for Post-war Years upto 1958, by IWANANI-SHOTEN, The Institute of Economic Research, Hitotsubashi University, Tokyo, Japan, 1961, pp. 192, 550 Yen (Rs. 7.27 approx.).

THIS book, issued as "a separate volume of Economic Research Series" of the Institute, is a sequel to the "Annotated Economic

Statistics (Kaisetsu Keizai Tokei)," published in 1953. In the 1953 publication, the economic statistics were presented for the period from 1930 to 1950-51 and emphasis was laid upon securing comparability between the pre-war and the post-war series of statistical data.

The recent rapid developments both in statistical methodology and economic analysis have had considerable impact on the economic statistics compiled by the Governmental organizations in Japan. The statistical data available for post-war Japan are much more detailed and comprehensive than those for the pre-war period. The publication under review attempts to sketch, with the help of improved statistics, the trends in the Japanese economy during the post-war period of rapid economic development.

As most of the statistical data are collected and compiled by the Government organizations, originally for administrative purposes, their definitions and classifications are not always satisfactory for the economic theorist. It is an important contribution of this publication that the statistical data are critically examined and systematically rearranged by economists from the view-point of their usefulness in economic analysis. Thus the book will help in resolving the confusion often faced by unsophisticated users (including some economists who are not familiar with the nature of government statistics) concerning concepts and definitions used, classifications and the comparability of statistical data.

As in the 1953 publication, statistical tables are arranged according to the factors determining the national income. Since the national income estimation usually needs most comprehensive and systematized information on the national economy, almost all useful and important economic indicators have received due attention in this book. The recently developed economic tables, such as the input-output table, the national balance sheet, an integrated account of national income and money flow, the money-flow table and a matrix of financial transactions have also been included.

The total of 192 pages is divided among 13 chapters, a bibliography and an index. The chapters deal with (1) national income, (2) population and labour force, (3) production (agriculture, forestry and fishery), (4) production (mining and industry), (5) commerce, (6) firms and establishments, (7) foreign trade and international balance of payments, (8) transportation, (9) prices, (10) employment and wages, (11) consumption and family budget, (12) money and banking, and (13) public finance. Each chapter contains a "General Description" and "Statistical Tables." In the "General Description" are summarized various economic and statistical problems, the related economic theory and interrelationships of the statistical

data presented in the chapter. Statistical Tables are usually shown as time series for post-war years upto 1958, but most fundamental tables give data also for the pre-war years beginning with 1930. To each of the 73 main statistical tables are annexed a "Note for Users," "Explanatory Remarks," and "References." The "Note for Users" is provided to help the users of statistics to understand the concepts and definitions underlying the statistics, and the basis and comparability of classifications. "Explanatory Remarks" summarize the general economic problems revealed by the statistical tables and explain the relevant economic theory. "References" include citations to other related domestic and foreign statistics and reference books.

The book will be warmly welcomed by both economists and statisticians, who may be interested in understanding the development of statistical system in post-war Japan and the relationship of statistics with economic theory. Those who wish to review the economic developments in post-war Japan through systematically arranged and critically evaluated statistics will also find the book valuable.

Unfortunately, however, the book has hardly any value for persons unable to read Japanese. Usefulness of the book could have been enhanced by giving headings, captions, stubs and notes of tables in English and by providing English summaries of the discussion in each chapter.

Bombay. HIROYASU KUDO

Working with People in Small Communities, by KING CLARENCE, Harper & Brothers, New York, 1958, pp. 130, $2.50.

THIS small book is intended for teachers—for persons who have undertaken "to train young men and women..... in the art of community organization..... or the process of community development" (p. 1). Dr. King has collected here illustrative case histories of community development work in ten small communities in as many countries, *i.e.*, U.S.A., Mexico and Puerto Rico in North America, Greece in Europe, Egypt and Nigeria in Africa, India, Korea and Thailand in Asia, and New Zealand in Oceania. Following a description of the problems faced and the methods of solution employed in each community considered, an attempt is made to analyse each case-history and derive main principles of the art of working with people in villages or small communities.

The author feels that in training village-level workers, instructors should require the trainees to discuss records of some 'live

cases' and to suggest ways of solving the problems encountered. "From these records and their thinking about them, they (trainees) must seek a vicarious experience" (p. 3). Such a process of analysis and discussion will "sharpen" a student's thinking about the situations likely to face him in a community and will help him cope with the difficulties that might arise, "even though solutions suggested by the seminar are impractical" (*Ibid.*).

The principles of community development discussed in the book are, of course, not new, but placed against the background of actual field experiences in various countries, they seem logical. The case of Colton, a community on the East coast of the U.S.A., where a social worker was employed in 1931, suggests how "a vigorous, dynamic promoter" can prove "over-active," making no permanent impact on the community. Case histories of the village communities in Korea, on the contrary, show how indirect and "passive" leadership can leave a lasting impression on the lives of the public by making individuals learn to solve their problems through self-help. Dr. King rightly wants to assure the trainees that "the real test of their success as indirect leaders will be what continues to happen in the community after they have left" (p. 13). The same theme is stressed in the Egyptian example where an impatient provincial Governor sent policemen to force the villagers to complete a slow-moving enterprise, and impaired the position of the social worker who was subsequently handicapped to some extent in his activities. Community development workers are warned that "our ultimate purpose should be to leave the community better and stronger than we found it, not only materially, but psychologically and spiritually" (p. 44).

In Greece and Korea, the principle of community development employment is reported to have yielded substantial results by way of an investment of the spare time of the rural population. In Greece, for example, the national Government asked the provincial Governors to "inform communities that if they wish to select and operate local works of public benefit and will pay all costs involved, the national Government will make a small daily payment to each person employed" (p. 55). This system of a token wage payment was intended to provide for the extra-food requirements of the workers who joined the project, agreed upon by the entire village community as both necessary and practicable. A similar plan worked well in a village in Nigeria and set up a strong 'demonstration effect,' inducing neighbouring communities to undertake projects resembling those executed in the pioneering village. The main distinguishing feature, however, was the fact that the new head of the village had been a clerk to a senior Government official, familiar with the ways of Government, and he had been specially called by the village to "direct the village affairs, and especially to represent

the village on the native authority's council and court, and to see whether he could not obtain for his village a bigger share of the benefits usually obtained from the native administration" (p. 77).

It seems that the method adopted in Korea and Greece is better than the one accepted in India where an elaborate machinery set up for community developments has failed to take full account of the facts that the initiative must come from the people and the priorities in the projects undertaken must follow the expressed needs of the people. It is unfortunate that Dr. King has not selected any actual case of community development work in India, for that would have given him a chance to compare the Indian approach with that followed elsewhere. The chapter on Karimpur in India is an analysis by an American missionary couple of the basic problems of village reconstruction based on the couple's experiences and observation in a village in U.P. during a period of "five years prior to 1930." That the account and the analysis should resemble those in the reports of the Rural Credit Survey Committee is a tribute to the competence of the missionary observers and a testimony to the virtual absence of change in rural India between the 1920's and the 1950's.

The reviewer is, however, unhappy with the fact that Dr. King has drawn most of his case-histories from the reports submitted to the U.N. or those written by persons in charge of the community development work because such reports generally have a tendency to dress up the actual events. Perhaps it would have been much better if the author who was a consultant on Community Development for the United Nations, had analysed mainly the cases personally known to him. That would have helped to make the analysis more detailed and sharp. While the book in its present form may fulfil the purpose of illustrating the seminar procedure to the instructors in Community Development Training Institutes, a more intensive description and analysis of perhaps fewer cases would have enhanced its value considerably.

Dr. King reports that Mr. Albert Mayer, when shown "several of these case records" and asked about their usefulness in training centres for community workers in India, "spoke favourably of some of them but advised that preference be given to those that realistically portryed difficulties that must be faced" (p. 91). It is regrettable that Mr. Mayer's advice has not been taken more seriously.

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NOTES

*An Empirical Analysis of the Factors Contributing to a Lower Growth Rate of Population in Madras State During 1951-1961**

INTRODUCTION

DURING the last ten years, a good deal of attention has been focussed on the problems of population growth in India. Discussions by both the economists and the demographers have centered on what is currently described as the 'population explosion' in the country. By this term is referred to a situation where the death rate declines very fast whereas there is no parallel reductions in the birth rate, and as a consequence the rate of population growth becomes alarmingly high. There has been an unanimity of opinion that the rate of growth of population in India has been showing signs of rapid acceleration which will have serious repercussions on the economy.

Not contrary to these expectations, the provisional results of the 1961 census have also revealed an unprecedented increase of 21.5 per cent during the 1951-61 decade which is in excess of the upper limit of all population projections made for this period. While this calls for a detailed investigation of the forces underlying the current demographic upsurge, the 1961 census is also of significance for its startling revealation of differentials in the growth rate of population in the different states.

In particular, what is most significant and surprising is the low percentage increase in the population of Madras State. In quantitative terms when the population of the country as a whole has grown by 21.5 per cent during 1951-61 in contrast to 13.3 per cent in 1941-51, the Madras State has witnessed a decelaration in the growth rate from 14.7 per cent in 1941-51 to 11.7 per cent in 1951-61. There are several factors which could have contributed to this lower growth rate in Madras as against that of India. The object of this paper is to examine the probable factors affecting population growth, and to indicate the contribution of each factor to the difference in the growth rate of India as a whole and Madras.

*This is a preliminary study undertaken in connection with the main project, '*Population Projections for Madras State, 1961-1981*' at the Demographic Training and Research Centre, Bombay. We are greatly indebted to Dr. C. Chandrasekaran and Dr. P. R. Brahamanand for their advice and encouragement. However, we are alone responsible for any drawback or deficiency in this paper.

II

METHODOLOGY OF THE STUDY

The population growth consists of three major components, *viz.*, births, deaths and migration. Considering the birth rate, it is known to be determined by numerous factors, biological, economic and sociological. To catalogue, these are (i) the age-sex distribution of the population, (ii) the marital status pattern, (iii) the age at marriage, (iv) the incidence of widowhood, and (v) the fertility schedule. While one may expect a fall in the incidence of widowhood on account of the declining mortality to push the birth rate upward, a rise in the age at marriage and the spread of family planning are expected to depress the birth rate. These factors do not operate independently, but interact upon one another. Having regard to this, caution has also been taken to account for the interaction effect in our method of analysis. The methodological details, however, are not presented here.

With regard to the death rate, there may exist differences in the level and/or the rate of decline of mortality in Madras State and India. It is due to the nature of causes of deaths at different places and time which in turn depends on the general social and economic conditions of the people as well as on available medical facilities and public health measures undertaken by local and state governments. Taking into consideration the force of operation of these factors, the probable reduction in the death rate is forecast for Madras State and India during the decade 1951-61.

When the levels of the birth and death rates are thus known, it is possible to determine the effect of the remaining factors. The fundamental growth equation is

$$P_{1961} - P_{1951} = B_{1951-1961} - D_{1951-1961} + R_{1951-1961}$$

where P denotes the total population, B and D the estimated number of births and deaths respectively and R the residual comprising mostly of the migrants and a small number of births and/or deaths not accounted before in the analysis. For India as a whole, the international migration and hence the residual factor may be assumed to be negligible. The equation for India, therefore, reduces to

$$\text{Growth } (G) = P_{1961} - P_{1951} = B_{1951-1961} - D_{1951-1961}$$

If we denote these variables for Madras State by B′, D′ and R′ respectively, then

$$\text{Growth } (G') = P'_{1961} - P'_{1951} = B'_{1951-1961} - D'_{1951-1961} + R'_{1951-1961}$$

The value of G′ is known from the preliminary results of the 1961 census, and therefore from the estimated values of B′ and D′ it is possible to obtain that of R′ which accounts in the main the contribution of migration.

III

Basic Data Needed for the Study

For any investigation of this nature one requires data on age-sex distribution, marital status pattern, fertility, mortality and migration pertaining to the period under study. Since the complete details relating to the 1961 census are not available resort has been made of the data for 1951 regarding age-sex distribution and the marital status pattern with the implicit assumption that significant changes could not have occured since then in these characteristics. The basic data for our calculations are presented in Table I.

Table I

Number and Proportion of married females in broad age groups—1951

Age group	India			Madras		
	Total No. of women	Number of married women	Col. (3) as % of Col. (2)	Total No. of women	Number of married women	Col. 6 as % of col. (5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
15-24	2,987,920	2,390,046	80·0	269,924	177,700	64·7
25-34	2,648,008	2,359,380	89·1	239,678	210,656	87·9
35-44	1,941,595	1,525,529	78·6	180,905	138,029	76·3
15-44	7,577,523	6,274,964	82·8	690,502	523,385	75·8

Source : *Census of India, Paper No.* 1, 1957, Page No. 120.

In India the registration system is far from complete and hence census actuaries in the past relied upon the smoothed age distributions for estimating the birth and death rates. The census actuary for the 1951 census has estimated the birth and death rates of India and states by the application of the Reverse Survival and the Differencing methods. These indicated a level of 34.7 as the birth rate and 22.8 as the death rate of Madras State and the corresponding figures for all-India are 39.2 and 27.4 respectively.[1] For the purpose of the present study, these figures have been assumed to be valid for the decade 1941-51. In India there is no registration system regarding movement of population and hence migration can be estimated only indirectly. Prof. Zacharia has estimated net migration for the erstwhile Madras State for 1941-51 decade, which shows that the net migration was positive. This was due to an exceptionally heavy return migration in 1941-51 of those persons who had earlier migrated to Burma and Ceylon and hence this movement cannot be expected to continue in 1951-61. In the present study migration has been included in the residual category

[1] *Census of India, Paper No. 6, 1954, "Estimation of Birth and Death Rates in India during 1941-50, 1951 Census,"* page 37.

and no precise estimate of migration is possible until the age-sex distribution of the 1961 census becomes available.

The data relating to the number of sterilazations performed and the number of persons contacted have been made use of for estimating the probable contribution of this factor. There are many limitations in the data and hence not enough reliance can be placed on the estimate. Secondly, we require the specific marital fertility rates of India in order to express the birth rate of Madras as a proportion of that of India. In the absence of such data for India as a whole, the rates obtained from several studies have been averaged and these have been assumed for India. For Madras State the fertiltiy schedule of the Banglore city obtained from the Mysore Survey

TABLE II

Age specific fertility rates per 1000 married women from various studies in India

	Age Group					
	15-19	20-24	25-29	30-34	35-39	40-44
1. *Mysore Survey*						
Rural hills with anti-malarial operations	295	393	311	185	244	31
Rural hills without anti-malarial operations ...	272	302	322	223	147	81
Rural Plains ...	277	293	302	170	157	61
Towns	231	310	273	263	201	73
Bangalore City ...	297	253	201	174	88	36
2. Birth Order Statistics Analysis by S. P. Jain	155	300	274	282	186	118
3. West-Bengal (1951 census) I ...	168	235	255	213	138	77
II ...	166	233	259	222	152	89
4. Kolhapur City ...	221	263	243	192	116	43
5. Maternity data of U.P.	146	239	253	227	190	97
Average	223	282	269	215	162	71

TABLE III

Age specific marital fertility rates for India and Madras, 1951-61 Assumed

Age group	India	Madras	Weights	Reconstructed rates for 10 year age groups India	Madras
(1)	(2)	(3)	(4)	(5)	(6)
15-19	223	297	164	253	275
20-24	282	253	173		
25-29	269	201	187	245	189
30-34	215	174	140		
35-39	162	88	99	124	66
40-44	71	36	71		

has been assumed. Such data on age and civil conditions for India being available only by 10 year age groups, the quinquennial age-specific rates had to be reconstructed for 10 year age groups. The age specific rates obtained from the selected studies are given in Table II and those reconstructed for 10 year age groups are shown in Table III.

IV

The Results

Using the schedule of age specific marital fertility rates obtained in column (5) of Table III, the general marital fertility rate has been calculated for Madras and India. Similarly, the proportion of married females in the reproductive age group 15-44, the proportion of females in the reproductive age group to all females, and the proportion of females to the total population have been computed for Madras and India separately. The results are given in Table IV.

Table IV

Some factors contributing to differences in birth rate between India and Madras, 1951

Factor (1)		India (2)	Madras (3)	Col. (3) / (2) (4)
1. Number of births per 1000 women aged 15-44	(α)	218·6	215·8	·0872
2. Proportion of married women in 15-44	(β)	828	·758	·9143
(3) Proportion of females in 15-44 to total females	(γ)	·448	·460	1·0268
(4) $\frac{F}{P} = \frac{s}{100 + s} = \delta$		·486	·501	1·0309

Note :—The sex ratio s stands for the number of females per 100 males.

It is seen from this table that the factors α and β lead to a lower birth rate in Madras State when compared to that of India, whereas the factors γ and δ can lead to a higher birth rate when the fertility pattern is assumed to be the same. It is probable that there are differences in the fertility pattern itself on account of a higher age at marriage in Madras, the differentials in the incidence of widowhood and a host of other forces which influence the fertility pattern. These have been treated separately. The result that emerges from Table IV is therefore to point out that the general marital fertility rate of Madras could be 1.3% less than that of India even if the fertility pattern is assumed to be the same. Similarly the differences in the proportion of married women can contribute

to another 8.6% reduction in the birth rate. On the contrary, the age sex distribution of Madras State will lead to a birth rate which is 5.9% higher than that of India. The net effect of all the four factors will account for a birth rate which is less than that of India by 4.5%.

As pointed out earlier, the fertility pattern itself is affected by the operation of the age at marriage and the incidence of widowhood. Dr. Agarwala has shown that the mean age at marriage of females in India has increased from 12.6 years in 1921-31 decade to 15.5 years in 1941-51 decade. This increase of roughly 3 years in a period of 20 years would result in a 3% decline in birth rate.[2] A recent study has shown that a rise in the expectation of life at birth from 35 to 50 years could lead to a decline in the proportion widowed at the age 30 of the order of 45%.[3] The average age at marriage of females in Madras State in 1951 was found to be 18.2[4] and this might have risen still further due to certain sociological and other factors such as the dowry system, the progress of higher education among women and so on. The average age at marriage in 1961 can be known only after the details regarding age and civil conditions of people become available. In the present study the specific marital fertility rates obtained in different studies for different parts of India have been averaged and these have been assumed true for India as a whole. For Madras State the schedule of fertility rates for Bangalore city obtained from the Mysore Survey

TABLE V

Marital Status of Women and Age Specific Marital Fertility Rates for Madras and India

Age group	Percentage married		Percentage widowed		Age specific marital fertility rates	
	Madras	India	Madras	India	Madras	India
(1)	(2)	(3)	(4)	(5)	(6)	(7)
15-24	64·7	80·0	2·5	2·8	275	253
25-34	87·9	89·1	8·6	8·0	189	245
35-44	76·3	78·6	22·0	19·9	60	124

Note :—The percentage widowed is inclusive of the divorces or separated persons in Madras State and India.

[2] Agarwala, S. N., *Mean Age at Marriage as Ascertained from the Census Data*, Princeton University (unpublished). For a brief reference, vide, *Population Index*, Vol. 23, p. 96.

[3] Sarma, R. S. S., *The Effect of Decline in Mortality on the Incidence of Widowhood*, Demographic Training and Research Centre, Bombay (unpublished).

[4] Vaidyanathan, K. E., *A Demographic Study of Madras State*, Demophic Training and Research Centre, Bombay, p. 68 (unpublished).

has been adopted since the conditions in Bangalore city as regards the age at marriage and the incidence of widowhood are more or less comparable with that of Madras. Table V brings out the effect of the differentials in the proportion married and widowed on the fertility schedule.

It is seen from the above table, that the percentage married follows an inverted U shape curve with the peak at somewhere in the age group 25-34. Such a curve is the result of the age at marriage and of female specific mortality. The striking difference in the shape of the curves for Madras State and India is therefore accountable by differences in the operation of these factors, and it seems difficult to isolate their effect. But the net effect on fertility pattern owing to these differences is found here, according to the methodology described in Section II, to lead to a birth rate in Madras State which will be lower than the birth rate of India by 14.2 per cent. In passing, however, it may be observed by comparing columns 4 and 5 of Table V that the effect of differential incidence of widowhood will not be great on the present birth rates of Madras State and India.

Lastly, a rough calculation indicates that the progress of family planning in Madras State will cause a relatively larger reduction by about 0.7 per cent of her birth rate.[5]

Next to birth rate, the death rate is an important factor in the dynamics of population growth. The registered death rates as well as that arrived at by some recent demographic studies conducted in different parts of India point to a sharp downward trend in the death rate. Based on these evidences, the decline in death rate under alternative consumptions regarding the improvements in the expectation of life at birth has been worked out for analysis here, and the results are set out in Table VI.

The authors' contention is that the improvement in the mortality levels in India was faster than that of Madras in 1951-61 and could be comparable with that of Ceylon in the decade 1941-51. The reason for this is that in both cases a large-scale malaria eradication programme has been instrumental in bringing about a sizable reduction in mortality. On the other hand, Madias State has been relatively free from malarial tracts even at the beginning of the decade and any great diminution in mortality on this count is there-

[5] The calculation is based on the assumption that the birth rate is proportional to the factor, viz.

$$1 - \frac{\text{Number of sterilizations} + 5\% \text{ of the number of persons advised}}{\text{Females, 15-44}}$$

fore ruled out. Morever, where there has been already a low level of mortality rate, further reduction is harder to attain. Hence, a reasonable assumption one can make for purposes of analysis is that the gain in the expectation of life at birth is one year per annum in the case of India, whereas it is .75 year per annum for Madars. If this had taken place the expectation of life at birth in Madras would have increased from 37.5 years in 1941-51 to 45.0 years in 1951-61, while that of India would have risen from 32.5 years in 1941-51 to 42.5 years in 1951-61. This will mean a reduction in the crude death rate of the order of 31.7 per cent in the case of India and 24.2 per cent in the case of Madras.

TABLE VI

Decline in crude death rate under alternative assumptions regarding expectation of life at birth (e°o)

	Assumption	Per cent decline in crude death rate
India	(1) e° would go up from 32·5 years to 42·5 in 1951-61	31·7
	(2) e° would go up from 32·5 years in 1941-51 to 47·5 in 1951-61 ...	43·4
Madras	(1) e° would go up from 37·5 years in 1941-51 to 47·5 in 1951-61 ...	30·9
	(2) e° would go up from 37·5 years in 1941-51 to 45·0 in 1951-61 ...	24·2

If the death rate of India for 1941-51 decade had been taken to be 27.4 per thousand it could have declined about 18.7 per thousand in 1951-61. In contrast, Madras might have lowered her death rate from 22.8 in 1941-51 to 17.3 during 1951-61. For India as a whole, the migration may be assumed to be negligible and hence the growth rate and the rate of natural increase of population must be the same. From the natural increase of 21.5 per thousand of the population of the decade, one may derive at a birth rate of 40.2 per thousand (21.5 + 18.7) for 1951-61, which is in close conformity with the assumptions regarding fertility involved in the recent population projections for India.

To sum up, the discussion above shows that the general fertility rate, the proportion of married females in the reproductive age group 15-44, the proportion of females in the reproductive age group to total females, and the sex ratio at birth could have contributed to lower birth rate by 6 per cent in Madras State than that of India. The higher age at marriage in Madras State and the differences in the incidence of widowhood could have caused another 10 per cent difference in the birth rate of Madras and India and a further reduction of 0.7 per cent may be attributed to family planning. The total

effect of all the factors could thus contribute to a birth rate in Madras State which is 16.7 per cent less than that of India. If the birth rate of India for 1951-61 is taken to be 40.2 per thousand as derived in this paper, the birth rate of Madras will be of the order of 32.7 per thousand in 1951-61. The death rate is found before to be of the order of 17.3 per thousand and so we are left with a rate of natural increase of 15.4 per thousand per annum in 1951-61. The percentage increase in the population of Madras State in 1951-61 as revealed by the 1961 Census has been 11.7 per cent, and hence by applying the balancing equation we find that there is a residual of the order of 3.7 per thousand which may be accountable by migration and other factors not included in the above analysis. All told, the emerging demographic situation of India and Madras State may be presented as below:

TABLE VII

The Components of Population Growth during 1951-61

	Bitth rate per 1000 of population	Death rate per 1000 of population	Rate of natural increase per 1000 of population	Rate of increase in enumerated population during 1951-61	Residual
(1)	(2)	(3)	(4)	(5)	(6)
India	40·2	18·7	21·5	21·5	—
Madras	32·7	17·3	15·4	11·7	—3·7

Using the results obtained above it is possible to arrive at the contribution of each factor to the difference in the percentage increase in population of India and Madras which works out to 9.76 per cent during 1951-61. The results are given in Table VIII.

TABLE VIII

Contribution of Various Factors to the Difference in the Population Growth Rate of Madras State

Factor	Unit	% to total difference
1. General marital fertility rate	·40	5·0
2. Proportion of married women in 15-44 ...	3·25	33·3
3. Proportion of females in 15-44 to total females	— 1·02	—10·5
4. Sex ratio	— 1·17	—12·0
5. Differences in fertility pattern due to difference in age at marriage and incidence of widowhood	5·68	58·2
6. Differences in death rate	— 1·40	—14·3
7. Family planning	0·28	2·9
8. Residual	3·65	37·4
Total	9·76	100·0

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Marriage and Divorce Statistics

THE field of demography has been exceedingly fortunate in having received substantial support from the United Nations. A special Population Branch of the U.N. Bureau of Social Affairs has published several remarkable handbooks on techniques of demographic analysis and their applications to several countries, many of which lack persons trained to undertake demographic research.

Since 1948, the U.N. Statistical Office has published annually the Demographic Yearbooks which have become the central international source of demographic statistics. The detailed treatment, each year, of a special topic in demography has considerably enhanced the usefulness of these yearbooks. The *Demographic Yearbook, 1958*, the tenth in the series, has focussed attention on "Marriage and Divorce Statistics." Other topics such as general demography (1948, 1953), natality statistics (1949-50, 1954), mortality statistics (1951, 1957), population distribution (1952), population censuses (1955) and ethnic and economic characteristics of population (1956) have been dealt with earlier.

The selection of "Marriage and Divorce Statistics" as the special topic of the 1958 Yearbook is commendable for, while the importance of birth and death registration has been universally recognised, and efforts are being made in most countries to improve or maintain its quality, marriage and its dissolution have not been given their appropriate place in vital registration. Till recently, these institutions have remained a more or less exclusive area of study for sociologists who have not bothered to view them as tools for demographic analysis.

The fact that when reproduction is largely the result of conscious planning by individual couples, trends in marriages can generally prove fairly reliable indicators of the baby crops of following years has frequently been emphasized by demographers—particularly after the post-war 'baby boom' in the Western countries. Economists and market researchers in the advanced and developing countries use the data on family formation to estimate the likely trends in consumption patterns of individuals and the housing needs of the community. To the extent that the participation of women in the labour force is a function of their marital status, labour force projections require data on trends in marriages and their dissolution. Information on the number of divorces and the characteristics of the divorces is also of great value because it can shed light on the stability of marriages, the length of family life, orphanhood through divorce, etc.

Censuses in almost all countries obtain information on the marital status distribution of the population, but the data available from the periodical censuses are not an adequate substitute for a

regular system of marriage and divorce registration. Census procedures are not well-suited to ask detailed questions on the characteristics of marriages such as the duration of total married life or of the present (or last) marriage, the age at marriage, the number of times a respondent was married or the birth-date of the present or last spouse. In fact, during the censuses taken in or around 1950, very few countries had collected data on these items.[1] Even the accuracy of reports on current marital status cannot be taken for granted, because some of the divorced and widowed persons describe themselves as single. To avoid the possibility of this error, the U.S. Census schedule of 1950 introduced the term 'never married' for the first time, and several other countries—including India in the 1961 census—have subsequently adopted this category.

Demographers have developed a technique to estimate, on certain assumptions, the mean age of marriage in a population, and if such estimates are available for several censuses, the trend in the average age of marriage can be observed; but the dynamics of the institutions of marriage and divorce cannot be studied in the absence of detailed data which can be obtained through a system of marriage and divorce registration. The census estimates of divorced persons in a community are a poor guide to the incidence of divorce because divorcees can, and often do, remarry. The frequently-observed grouping together of the divorced and the separated poses no problem if our purpose is to study 'marital disharmony'; but a comparison of such grouped estimates with the registered divorces becomes difficult.

A glance at the history of vital registration shows that the earliest marriage statistics were collected by the Christian ecclesiastics who were responsible for a record of weddings (and also of baptisms and burials); but on account of the need to pay for the ceremonies and absence of any co-ordination, the coverage and the quality of the registers were necessarily inadequate. Some parts of Japan seem to have had compulsory registration of marriages (and also of births and deaths) as early as in 720 A.D. A compulsory registration both of marriages and divorces was introduced by Jordan around 1400 and by Egypt in 1521. In 1563, the nineteenth ecumenical Council of Trent made keeping of registers a law of the Catholic Church, prescribed the registration of marriages and baptisms, and thus stimulated the general adoption of civil registration practices throughout Europe.[2]

[1] See U.N., *Handbook of Population Census Methods*, Volume III, New York, 1959, pp. 37-38.

[2] United Nations, *Handbook of Vital Statistics Methods*, New York, April 1955, p. 213.

Compulsory civil registration of marriages and divorces has now become widespread. On January 1, 1950, out of the 65 countries for which reports were available with the U.N., 59 had set up civil registration systems for recording marriages; the six exceptions were: India, Pakistan, Ceylon, Burma, Indonesia and the Union of South Africa.[3] As for divorce, civil registration was not compulsory for the bulk of the population in India, Pakistan, Indonesia and the Union of South Africa. Nine countries—Argentina,[4] Brazil, Chile, Colombia, Paraguay, Philippines, Ireland, Italy and Spain—had no law recognising divorce and therefore no records of divorces.

Without careful scrutiny, the statistics on marriage and divorce cannot be assumed to be reliable. Nor can we be sure of the validity of these figures—*i.e.*, about their representing the entire universe they are intended to represent. In several countries, there prevail 'consensual unions' or common law marriages which are never recorded as marriages. Divorce statistics by themselves may be an inadequate guide to the stability of marriages because there might exist separations or 'de facto' divorces before legal divorce decrees are obtained. Data relating to the number of divorces granted on particular grounds are notoriously inaccurate because parties unable to pull on with each other tend to adapt their reasons for seeking divorces to the legally permitted grounds.[5]

In the 1958 yearbook marriage statistics are presented for a total of 173 areas and divorce statistics for a total of 128 geographic areas. There are 16 tables, spread over 214 pages, which contain information on such items as the number of marriages and divorces, crude marriage and divorce rates, marriage rates specific for sex among the marriageable population and divorce rates among the married population, marriage rates specific for age and sex, divorces by number of children involved and by duration of marriage, etc. As the complexity of tables increases, the number of areas supplying the statistics shows a decline because the required details are not collected in all countries. There is scope for some standardization of marriage and divorce registration forms to ensure greater international comparability.

[3] *Ibid.*, pp. 20-25. In the Union of South Africa, marriage registration is compulsory for the non-Bantu population.

[4] Divorce became legal in Argentina on the 14th December, 1954. *Ibid.*, p. 25. Footnotes to Argentina in Table 24 and 25 of the *Demographic Yearbook, 1958*, indicating that 'there is no legal provision for divorce' appear to be erroneous.

[5] Several limitations of the available statistics have been pointed out in the second chapter of the 1958 Yearbook which contains "Technical Notes on the Statistical Tables." No one should use the figures presented in the tables without first consulting the relevant technical notes.

To evaluate the deficiencies of vital statistics, the U.N. made a special inquiry in 1956 to obtain "the national estimate of completeness and accuracy of data returned on the Demographic Yearbook annual questionnaire."[6] On the basis of the replies from various countries and other relevant publications national vital statistics have been classified into three broad categories:

C —— Relatively "complete", *i.e.*, representing at least 90% coverage of the events occurring each year;[7]

U —— "unreliable", *i.e.*, less than 90% coverage;

... —— Those concerning which no specific information is available.

A study of the evaluative symbols attached to the marriage and divorce statistics of various countries shows that reliable date are available for countries of Europe (except Greece), Oceania, North America (except the United States), some of the colonised territories and the European or non-indigenous populations of some of the countries in Africa and for Japan, Taiwan, Cyprus and some colonial pockets in Asia. For other areas, the reporting is deficient on account of either the absence of legal provisions for registration of marriage and divorce or an inadequate enforcement of the existing laws. It is evident that except the U.S., countries with poor or no marriage and divorce statistics are largely those in the category of economically under-developed countries.

That the U.S. vital statistics on marriage and divorce are "incomplete" may prove surprising. These data are inadequate and fragmentary due to the fact that marriage and divorce are under the jurisdiction of State Governments. While every State has a marriage licence law, not all States maintain a central file of records. The difficulties inherent in separate-State registration systems based on 48 or 50 different sets of laws are not easy to overcome. However, with helpful pressures from the American Sociological Association, efforts are being made to improve the coverage and the quality of these statistics. In January 1957, the Marriage Registration Area (MRA), patterned along the lines of the existing Birth and Death

[6] *Demographic Yearbook, 1958*, p. 15.

[7] The French data on the number of divorces and crude divorce rates have been described as "incomplete" with a symbol "U" (See p. 460 and p. 468 of the 1958 Yearbook). The reason mentioned in an illustration in the technical notes on "divorce statistics" suggests that in 1955, the French courts had pronounced a total of 31,268 divorce decrees. In the same year, the number of final decrees registered in the civil register was 29,185. Hence, some seven per cent of the divorces failed to be registered and France's divorce statistics are, therefore, marked "incomplete" (p. 19). This seems to be inconsistent with the criterion indicated above for judging a country's data as "relatively complete." One wonders whether some unspecified criteria have also been employed to evaluate the reliability of the data.

Registration Area, was inaugurated and the Divorce Registration Area (DRA) was set up in January 1958. By August 1960, 33 States had become members of the MRA and 18 of the DRA.[8] It is expected that these developments will gradually remove the present deficiencies of the available data.

The observation that statistics of marriage and divorce are "unreliable" or non-existent in the economically-under-developed countries, conforms to our usual expectations. The fact that many of these countries were (or have been) for a long time, colonies under foreign rulers who were (or are) only too keen to avoid any semblance of intervention in the customary framework of such basic social institutions as marriage and divorce, explains why compulsory civil registration of these vital events remains confined to small sections of the population. When the registration of even live-births and deaths—given "first priority" in the U.N. recommendations on the "Principles for a Vital Statistics System"—is grossly inadequate, it is small wonder that governments hesitate to spend their limited resources on recording marriage and its dissolution—which is given "secondary priority" by the U.N.

It is expected, however, that as economic development and industrialisation proceed in these countries, traditional institutions will undergo a metamorphosis. The extended family will be replaced by a nuclear family system and with the spread of education among women, the age at marriage, the nature of ceremonies performed at marriage and other characteristics such as the number of mixed marriages or widow-remarriages will probably show major changes. Similarly, the stability of marriages will, perhaps, be affected by an increasing recourse to legal remedies for a solution of domestic problems. Writing on "Divorce" in 1931, Frank H. Hankins, an American Sociologist, observed : "that urbanism and industrialisation are factors in increase of divorce has long been accepted as a truism."[9] To the extent that this statement is valid, divorce rates in the underdeveloped countries may increase with economic development. It is significant that the Government of Singapore has included in its social welfare programme "counselling and advice service for marital, domestic and other disputes."[10]

[8] See American Sociological Association, "Report of the Committee on Marriage and Divorce Statistics," *American Sociological Review*, Vol. 25, No. 6, December 1960, p. 948.

[9] *Encyclopaedia of the Social Sciences*, (New York, 1931), Vol. 5, p. 183. For evidence that this truism does not apply to Japan, see Kawashima, T., and Steiner, K., "Modernization and Divorce Rate Trends in Japan," *Economic Development and Cultural Change*, Vol. IX, No. 1, Part II, (Chicago: October 1960), pp. 213-239.

[10] See U.N., *Economic Bulletin for Asia and the Far East*, Vol. X, No. 3, December 1959, p. 16.

India was mentioned above among the few countries without a system of civil registration of marriages and divorces. The former State of Bombay, however, had passed the Bombay Registration of Marriages Act, 1953, which is in force in Maharashtra (and presumably in Gujarat as well) and which provides for compulsory registration of marriages. Similar enactments are reported to exist now in West Bengal, Madras and Delhi. These Acts are, of course, difficult to enforce and no statistics of the marriages registered under these Acts are available so far. At the all-India level, the Hindu Marriage Act of 1955, only empowers the State Governments to legislate for compulsory registration of marriages. While it permits the States to authorise penalties upto 25 rupees for non-registration, an unregistered marriage is not to be held invalid.

It is usually supposed that marriage being regarded as a sacrement among the Hindus in India, divorce is virtually non-existent; but it has been pointed out that divorce is permitted in certain circumstances in the Hindu texts of Narada, Parasara and Devala and customary divorce has been prevalent amongst most Hindus except the higher castes.[11] While piloting the Hindu Marriage Bill in the Parliament, Mr. H. V. Pataskar, the former Law Minister, observed that "divorce is allowed in more than 80 per cent of the population of our country. By custom it is allowed in this country in nearly 80 per cent of the population."[12]

The statistics of registered divorces are available only for the Parsis, among whom divorces and marriages are registered since 1865 under the Parsi Marriage and Divorce Act of 1865, and for the Christians, governed by the Indian Christians Marriage Act. (These two communities together formed less than 3 per cent of the Indian population in 1951). Divorces among the Hindus have not been recorded except those decreed under the Hindu Divorce Acts enacted in Baroda, the former Bombay State, the former Madras State and Saurashtra in 1931, 1946, 1949 and 1952 respectively; and even now, barring divorces granted under the Hindu Marriage Act of 1955, there is no provision for registering marriage dissolutions occurring under the customary or tribal law.

The Indian censuses which began as early as in 1871 cannot give even a rough indication of the early trend in divorces, because they grouped the divorced persons with the widowed. To illustrate, the instructions issued to enumerators in the Census of 1931 were

[11] See *Report of the Hindu Law Committee*, Government of India Press, Nasik Road, 1955 (Reprint of the 1947 report), p. 24.

[12] Lok Sabha Secretariat, *Lok Sabha Debates*, Part II, Vol. IV, New Delhi, 1955, p. 6494. Only the Hindu population is referred to in the second sentence, as can be seen in a subsequent remark made by Mr. Pataskar while replying to the general discussion on the Bill. He asked: "Is it not a fact that among 80 per cent of our people for whom we speak, the Hindus,... divorce is allowed by custom?" *Ibid.*, p. 7426.

to "record for each individual whether he or she were unmarried, married or widowed. Divorced persons who had not remarried were to be entered in the third category."[13] Since the 1941 census, however, divorced persons have been recorded separately. The data on age and civil condition of the 1941 population were tabulated for a two per cent sample and information on divorced persons in 1941 is available for the Part A States—so classified in 1951—, Delhi and the former native states of Hyderabad, Mysore and Travancore. The 1951 census tabulated the data on marital status for a ten per cent sample and provided information on divorced persons in separate appendices.[14] In the 1961 Census, marital status of the population will be tabulated from the full count and the 'divorced or separated' persons will be shown as a separate category.

Limitations of space prevent an analysis of the available census data on divorced persons in India; but the inadequacy of such information for understanding the dynamics of various changes in the institutions of marriage and divorce has been mentioned earlier in this note. It is high time that the governmental authorities at the Central as well as in the States realize the importance of marriage and divorce registration and enact the necessary legislation for a compulsory recording of all marriages and divorces including those occurring under customary law. Every law relating to vital registration should be given the widest possible publicity so that the country can hope to have an efficient system of vital statistics in a few years. The Registrar General's office can supervise and co-ordinate the registration of marriages and divorces and can integrate it with birth and death registration. Finally, the social scientists in India should take advantage of the opportunities open to them for studying processes of social change and should press the Government for collecting and providing them with the necessary data. Is it too optimistic to hope that the next time when the U.N. selects 'marriage and divorce statistics' as the special topic for a demographic yearbook, India should be able to provide some data on registered marriages and divorces?

Bombay. PRAVIN VISARIA

[13] Census of India, 1931, Vol. I—India, Part I—Report, p. 215.

[14] It is necessary to point out an error in the report on 'divorced persons' in Vindhya Pradesh. The *Census of India 1951*, Volume I, India, Part II-A, Demographic Tables, Table C-III on the age and civil condition shows the number of 'widowed or divorced' males and females in the sample population for Vindhya Pradesh as 10,928 and 22,062 respectively (p. 167). Appendix I to the table (p. 230) gives the *same* figures for the divorced males and females in the sample for the State. Unless the number of widowed persons in the State was zero—an impossible situation—, this is clearly an error, creeping in probably at the Central Census Office, because the State report makes it plain that in its Table C-III on age and civil condition, the figures for the divorced and widowed persons are shown together. See *Census of India 1951*, Volume XVI, Vindhya Pradesh, Part II—Tables, p. 261.

"Gold and the Dollar Crisis": A Rejoinder

MR. AJIT BHAGAT raises four issues in his "Some Notes on Gold and the Dollar Crisis"[1]; his purpose being to "consider some of the aspects of the Triffin Plan not covered" in my article, and "offer comments on the issues raised" by me. His first point relates to the limits on credit creation by the reconstituted Fund. The difficulties pointed out by him in the shape of writing in a rigid formula is very true. Mr. Triffin is well aware of it. However, the 3-5 per cent limit is to be construed as some kind of an absolute lending limit. There will be sufficient flexibility in operation to ensure a prudent policy. Mr. Bhagat should remember that theoretical limits whatever they may be serve no useful purpose. A banker is concerned with the relatively of situations as they develop from time to time. In his plan, Mr. Triffin provides a framework by which credit requirements can be fairly well calculated. I may lay down the equation as:

$$Lw = kG,$$

where

Lw = the desired liquidity,

k = ratio of gross reserves to imports (assumed constant at 0.33) and,

G = the annual rate of growth in world trade.

Assuming divergent rates of growth, the current liquidity needs may be estimated and the gap (including the supply of gold) filled by created credit.

Arising out of the first is Mr. Bhagat's apprehension as regards centralization of investment decisions. This seems to be a refrain as it appears in more than one context. If a majority decision in terms of a unique voting system is imposed, no member can ever complain of injustice. Rather than lead to a "a break and discontinuity in the present mechanism of *bilateral* financing," it would lead to a more equitable *multilateral* financing.

Moreover, the argument against centralization of investment decisions may also be levelled against the World Bank and other similar institutions. But have their centralized decisions promoted world prosperity or led to its collapse? Mr. Bhagat can draw his own conclusions from the post-war events.

Mr. Bhagat's third criticism relates to the Fund's stand by arrangements as a "second line" of defence against run on currencies. The case of the Sterling in 1956 is a post-war classical example.

[1] *Vide* this Journal January 1961, pp. 274-278.

This as a matter of fact is a powerful argument advanced against the Triffin Plan. Its advocates, however, forget that haphazard holdings of national currencies as international reserves is not obviated through this medium. Nor does the emergency Fund allopathy prevent an enlargement of the rupture in the future. For example if the Suez debacle had persisted a little longer, what would have been the fate of the Sterling ?

Further, the basic motive behind the world central bank is to introduce order into the sphere of international finance. The blind domineering market forces are to give way to a regulated mechanism. The totality of these reasons impelled me to suggest modifications in the existing fabric.

Mr. Bhagat's fourth argument relates to my proposal for a fiat currency standard. He tends to agree with Mr. Triffin on a legitimately functioning gold exchange standard. But, if it is assumed that the Fund is willing to fulfil its obligation of paying back the deposits in any currency, which itself may be related to gold, than all the difficulties advanced by him peter out, the advantages remaining intact.

Finally, Mr. Bhagat feels I have not given due emphasis to the current Fund quota system criticised by Mr. Triffin. This is because I agree with Mr. Triffin on this score. But where we tend to differ is on emphasis: to me speculative funds are a greater source of danger to world prosperity and exchange stability, then liquidity itself. With this motive in mind modifications in the Fund were suggested.

KERSI DOODHA

Two Reflections on the Cobb-Douglas Production Function

The purpose of this paper is two-fold: (i) to describe briefly the more important properties of the Cobb-Douglas Production Function of degree one, and (ii) to argue that the simplicity and empirical excellence of the function depend largely on the method adopted for measuring the inputs of labour and capital.

Let

Q = Quantity of homogeneous product

L = Quantity of homogeneous labour

K = Quantity of homogeneous capital

P_q = Price of the product

W = Wage rate (price of labour)

W_i = Wage rate of the i th "kind" of labour

L_i = i th "kind" of labour

π = Rate of profit

C = Average cost of production

λ = Elasticity of the absolute share of a factor with respect to changes in the quantity of the product (*i.e.*, "returns to scale" factor)

σ = Elasticity of substitution.

I

Let

$$Q = \alpha L^{\beta} K^{\gamma}; \text{ and } \beta + \gamma = 1$$

then

1·1 $\beta = \frac{\partial Q}{\partial L} \times \frac{L}{Q}$ and $\gamma = \frac{\partial Q}{\partial K} \times \frac{K}{Q}$ (Relative shares of the two factors)

1·2 $\frac{\partial Q}{\partial L} = \frac{\beta Q}{L}$ and $\frac{\partial Q}{\partial K} = \frac{\gamma Q}{K}$ (marginal products of the two factors)

1.3 $\frac{\partial Q}{\partial L} \cdot L = \beta Q$ and $\frac{\partial Q}{\partial K} \cdot K = \gamma Q$ (absolute shares of the two factors)

And

$$\frac{\partial Q}{\partial L} \cdot L + \frac{\partial Q}{\partial K} \cdot K = \beta Q + \gamma Q = Q$$

This is according to Euler's theorem on homogeneous functions. (However, if the production function is homogeneous of degree λ and $\lambda \neq 1$, $\frac{\partial Q}{\partial L} L + \frac{\partial Q}{\partial K} K = \lambda Q$. For $\lambda > 1$ total product is more than exhausted ; there is a deficit, i. e. $Q < \lambda Q$. For $\lambda < 1$ total product is not completely exhausted ; there is a surplus i. e. $Q > \lambda Q$.)

1.4 Given $\lambda = 1$, $\frac{\beta}{\gamma}$ is constant for all Q.

Given Q, $d\left(\frac{K}{L}\right) \times \frac{L}{K} = \frac{1}{s} ds$

where $s = \frac{\beta}{\gamma} \frac{K}{L} = \frac{\partial Q / \partial L}{\partial Q / \partial K}$. In other words, $\sigma = 1\ (-1)$

1.5. The elasticity of demand for a factor (say labour), *i.e.* the elasticity of the marginal value product of labour is given by

$$\eta_L = (\beta)\,\lambda + (\gamma)\,\sigma$$

Given $\lambda = 1$ and $\sigma = 1$, $\eta_L = 1\,(-1)$. And $\frac{\partial Q}{\partial L}$ L is constant for a given Q.

$$\beta = \frac{\eta_L - (\gamma)\,\sigma}{\lambda}$$

η_L and β seem to be independent of the supply prices of labour or the marginal labour cost.

To establish the point made above, assume a position of equilibrium under constant returns to scale.

1.1′ $C = \frac{1}{Q}(LW + K\pi)$ or

$$C = \frac{1}{Q}(\beta + \gamma)\,Q.P_q$$

$$C = P_q$$

1.2′ But C is a minimum and therefore, (for example)

$$\frac{\partial C}{\partial L} = 0, \text{ i.e. } \frac{\partial \frac{1}{Q}(LW + K\pi)}{\partial L} = 0$$

This can be written

$$\frac{\partial C}{\partial L} = \frac{1}{Q}\frac{\partial (LW + K\pi)}{\partial L} + (LW + K\pi)\frac{\partial \frac{1}{Q}}{\partial L}$$

1.3′ But $\frac{\partial \frac{1}{Q}}{\partial L} = \frac{d\frac{1}{Q}}{dQ} \cdot \frac{\partial Q}{\partial L}$

1.4′ $\frac{\partial (LW + K\pi)}{\partial L} = W$, and

1.5′ $\frac{d\frac{1}{Q}}{dQ} = \frac{-1}{Q^2}$

By suitable substitution of 1·3′, 1.4′ and 1.5′ in 1.2′ we get

$$\frac{\partial C}{\partial L} = \frac{1}{Q}W - \frac{1}{Q^2}\frac{\partial Q}{\partial L} \cdot (QC)$$

i.e. $\frac{\partial C}{\partial L} = \frac{1}{Q}\left(W - \frac{\partial Q}{\partial L} \cdot C\right)$ As $\frac{1}{Q}$ cannot be zero for any finite Q

1.6′ $\left(W - \frac{\partial Q}{\partial L} \cdot C\right) = 0$

It follows from 1·6′ that any automonous changes in W (i.e. supply price of labour) are simultaneously followed by equal direct proportionate changes in $\frac{\partial Q}{\partial L}$ so that

1·7′ $W = \frac{\partial Q}{\partial L} \cdot C$ and

the change in $\frac{\partial Q}{\partial L}$ is simultaneously followed by an equal inverse proportionate change in L so that

1·8′ $L \frac{\partial Q}{\partial L} = \beta Q.$

II

Given $\lambda = 1$, all technical progress is neutral in nature; in other words, technical progress will leave the relative shares of the factors unaltered. In a function of the form

2·1 $Q = L^{\beta} K^{\gamma} e^{et}$ where $\beta + \gamma = 1$ there is no scope explicitly to bring out the contribution of non-neutral (labour saving or capital saving) technology to the total product, Q.

But in practice technology is just as likely to be non-neutral as neutral, and since the production function under constant returns to scale can explicitly take into account only the neutral inventions a method must be found to "smuggle" into it the effect of the non-neutral inventions.

Non-neutral technology increases Q but will alter the value of β and γ in the above production function so that they will no longer add up to unity and the assumption of constant returns is contradicted, i.e., $\lambda \neq 1$. If β and γ should add up to unity and at the same time non-neutral technology should be taken into account, the independent variables of the production function have to be redefined so as themselves to absorb the impact of non-neutral technology.

Factors such as improvements in the skill and quality of the labour force, research and education, etc. which are instances of non-neutral technology affect the marginal productivity of factors and their market valuation. The prevailing market prices may be assumed to reflect the effect of non-neutral technology on the marginal productivity of, say, labour so that the annual wage-bill which is equal to $\sum_{i=1}^{n} L_i W_i$ is a payment made to labour (in constant pounds) for its numbers and their various degrees of skill.

However, $\sum_{i=1}^{n} L_i W_i$ cannot be used as a measure of labour inputs. For, as per the Cobb-Douglas function.

$$2.2 \quad \frac{\sum_{i=1}^{n} L_i W_i}{Q} = \frac{\beta Q}{Q} = \beta = \text{a constant.}$$ In other words,

$\sum_{i=1}^{n} L_i W_i$ and Q vary directly and in equal proportion. The elasticity of $\sum_{i=1}^{n} L_i W_i$ with respect to changes in $Q = +1$.

But if $\sum_{i=1}^{n} L_i W_i$ were to be used as an independent variable in the Cobb-Douglas production function of degree one, the index of its power (i.e. the elasticity) cannot be unity except in the trivial case of $\beta Q = Q = \sum_{i=1}^{n} L_i W_i$.

Alternatively, it can be shown that in a linear homogeneous function of two varibles

$$Q = f(L, K)$$

$$2.3 \quad \frac{Q}{L} = \phi\left(\frac{K}{L}\right) \text{ and } \frac{Q}{K} = \psi\left(\frac{L}{K}\right).$$

In the Cobb-Douglas form

$$2.4 \quad \frac{Q}{L} = \alpha\left(\frac{K}{L}\right)^{\gamma} = \frac{\partial Q}{\partial L} \cdot \frac{1}{\beta} \text{ and}$$

$$2.5 \quad \frac{Q}{K} = \alpha\left(\frac{L}{K}\right)^{\beta} = \frac{\partial Q}{\partial K} \cdot \frac{1}{\gamma}$$

If, however, $\sum_{i=1}^{n} L_i W_i$ were to be substituted for L,

$$\frac{Q}{\left(\sum_{i=1}^{n} L_i W_i\right)} = \frac{1}{\beta} = \text{a constant for all Q.}$$

To put it differently:

$$Q = \sum_{i=1}^{n} L_i W_i + K\pi \text{ (in constant or current prices)}$$

Assume the community receives an income of Q and spends it all in demanding L and K (to be defined below). The payments made to L and K are $\sum_{i=1}^{n} L_i W_i$ and $K\pi$ respectively which are measured in the same units as Q.

In equilibrium, it is necessary that

2·6 $\dfrac{\partial Q}{\partial \left(\sum_{i=1}^{n} L_i W_i\right)} = \dfrac{\partial Q}{\partial (K\pi)}$. But, in a production function $Q = f(L, K)$, $\dfrac{\partial Q}{\partial L} = \dfrac{\partial Q}{\partial K}$ only as a matter of coincidence. And $\dfrac{\partial Q}{\partial L} = \dfrac{Q}{L}$ if $\dfrac{\partial Q}{\partial K} = 0$. (In the Cobb-Douglas form neither $\dfrac{\partial Q}{\partial L}$ nor $\dfrac{\partial Q}{\partial K}$ can be zero).*

A more desirable measure of labour inputs is $\dfrac{\left(\left(\sum_{i=1}^{n} L_i W_i\right)n\right)}{\sum_{i=1}^{n} W_i}$ not only because it absorbs the effect of the non-neutral inventions on the productivity of labour, but it is free from the defects to which $\sum_{i=1}^{n} L_i W_i$ is subject. This measure of labour inputs is even better than $\sum_{i=1}^{n} L_i = \sum_{i=1}^{n} \left(\dfrac{L_i W_i}{W_i}\right) = L$ = a simple aggregate of different kinds

*The point made above may be put in a rather general form: in a production function, no common unit of measurement can be employed for both the factors of production and the output. As a result, the familiar practice of employing the Cobb-Douglas production function in an input-output table in which both the inputs and outputs are measured in constant money units is rather suspect. It is, of course, perfectly feasible to employ it in an input-output table where the inputs are defined in physical units such as tons of coal or gallons of gasoline. But in that case, the comparability of inputs is lost.

of labour because $\sum_{i=1}^{n} \left(\frac{L_i W_i}{W_i}\right) \sum_{i=1}^{n} W_i/n \neq \sum_{i=1}^{n} L_i W_i$ except when $W_1 = W_2 = \ldots\ldots Wn$.

Hence we may define labour as being equal to

$$\frac{\left(\sum_{i=1}^{n} L_i W_i\right) n}{\sum_{i=1}^{n} W_i}$$ which, when multiplied by $\frac{\partial Q}{\partial L} = \frac{\sum_{i=1}^{n} W_i}{n}$ gives

$$\sum_{i=1}^{n} L_i W_i .$$

This is the weighted average quantity of labour multiplied by the number of "kinds" of labour. As the weights happen to be the marginal productivities of different "kinds" of labour the effect of non-neutral technology on the share of labour is worked into the definition of labour.

A similar procedure may be adopted for the definition of capital. However, since the number of kinds of capital is large and data on them are hard to come by a time series of the "real value of capital" adjusted for changes in the general price level may be used. The empirical correlate of the real value of capital is the market value of capital adjusted for the changes in the general price level.

The practical measure of the product is $\sum_{i=1}^{n} Po_i Q_{ii}$ where P_o refers to the base year prices and Q_i to the current year quantities.

Cambridge. D. V. RAMANA

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